of the urine disclosed abundant numbers of transitional epithelia, scattered crystal fragments, and small numbers of leukocytes and extracellular cocci. The red and white blood cell count ranged from 0-1 per high-powered field and there was a large amount of amorphous debris. Trace mineral analysis was within normal in house reference limits and there was profound depletion of liver, vitamin A levels (Table 6). Due to the extent of emaciation, this may have represented dietary deficiency, although post mortem deterioration and loss could not be discounted. Vitamin A has been cited as a marker for immune function, and it is interesting to speculate that reduced levels may have been a factor in the pulmonary mycosis in this animal. PCR on pooled lung, lymph node, spleen and brain was negative for consensus and marine mammal variant *Brucella* spp and Morbillivirus and positive for Mollicutes, including *Ureaplasma* spp and *Mycoplasma* spp. At present, the contribution of these bacteria to antemortem morbidity in marine mammals is unknown. No viruses were isolated on Vero or Mabin Darby cell lines and negative staining electron microscopy of the conjunctiva was unremarkable. The light mixed growth of *Raoultella terrigena* and *Moraxella* spp from multiple internal viscera was not considered pathologically significant and there was no growth from the abdominal fluid, vent or atrioventricular valve (Table 5). The lack of significant fungi isolation from the lung may have been due to reduced viability associated with freezing and thawing of the tissues. No *Salmonella* spp were isolated from the small intestine and the heavy growth of *Clostridium perfringens* was attributed to post mortem proliferation. Ingesta was processed by SAX solid phase extraction cartridges followed by analysis by HPLC with UV detection at 242 nm and was negative for domoic acid. Interpretation of the eye calcium (5.8 mg/dl), magnesium (4.94 mg/dl), phosphorus (51 mg/dl) and blood urea nitrogen (59.8 mg/dl) values was hindered due to the lack of established normal values, in cattle adequate or normal values are calcium: 6.0-7.5 mg/dl, magnesium: 1.90 mg/dl and phosphorus 1.3-3.0 mg/dl with BUN serum values between 9-16 mg/dl (Table 6).

SUMMARY OF POST MORTEM EXAMINATIONS AND LABORATORY RESULTS

Pathology

Freeze artifact and moderate to advanced post mortem decomposition in five of the 11 animals significantly hindered pathologic and forensic evaluation of tissues for acoustic trauma as well as other disease processes. In addition, four of these animals had variably extensive percutaneous or deep muscle scavenge lesions. In three of five poorly preserved porpoises, significant diagnoses included salmonella septicemia (03NWR05006), fibrinous peritonitis (03NWR05008) and occipital fractures (03NWR05010). In better preserved animals, there was a single case of peri-mortem cranial fractures (03NWR05011) and one case of necrotizing pneumonia (03NWR06005). No significant findings were identified in the five remaining necropsied porpoises (03NWR05003 was scanned but not necropsied).

Within virtually all examined heads, there was diffuse dark red discoloration of the internal surface of the skull and surface of the brain with scattered submeningeal accumulation of dark red black fluid (as seen in Figure 5). Close evaluation of multiple

sections of brain and periosteum failed to reveal any lesions consistent with acute hemorrhage; the grossly noted discoloration and accumulation of dark red fluid was not associated with acute hemorrhage and was most likely due to liquefactive and autolytic changes. Along the dorsolateral aspect and occasionally circumferentially investing the cranial cervical spinal cord and basioccipital region of the hindbrain, there was variable accumulation of either acute hemorrhage or hematoma formation (in 03NWR05001, 03NWR05005, 03NWR05008, 03NWR05011 and 03NWR05012) (Table 7). Acute retrobullar and peribullar hemorrhage frequently mixed with moderate and more rarely, marked accumulations of nematode parasites, were noted in eight of ten necropsied animals (03NWR05001, 03NWR05005, 03NWR05008, 03NWR05010, 03NWR05011, 03NWR05012, 03NWR05019 and 03NWR06005). With the exceptions of 03NWR05012, in which parasites were disproportionately heavy and extended into the calverium, and in case 03NWR06005, parasitic infections were considered within normal limits for wild porpoises.

Definitive signs consistent with more commonly observed human-related mortality such as fishery related injuries, gunshot, or ingestion of marine debris were not found in any of the animals examined. Cavitary lesions consistent with *in vivo* nitrogen gas bubble formation were not visible in any of the organs as reported in other strandings associated with use of military sonar (Jepson *et al.*, 2003).

CT Scans

Image analysis was conducted on seven intact carcasses and a single decapitated head (Table 8; Appendix D). Post mortem decomposition ranged from moderate to advanced with many tissues exhibiting freeze-thaw artifact. In five of eight samples, the skull was intact with no significant lesions noted within the brain. The grossly noted traumas in cases 03NWR05010 and 03NWR05011 are consistent with CT findings. In case 03NWR05003, due to the lack of density change within the temporal and parietal regions of the brain, a penetrating bone fragment (shard) that was reported on CT was considered a post mortem phenomenon. In case 03NWR05012, comparative low bone density and incompletely ossified cranial sutures were attributed to immaturity, rather than malnutrition or other disease processes. In this animal, there was pronounced enlargement of cranial nerve VII and VIII apertures, which presumably facilitated intracranial parasitic invasion from the peribullar into the subtemporal regions. In six of eight pairs of ears examined, there was uni- and occasionally bilateral peribullar parasitism frequently invested with variable amounts of blood deposits, in case 03NWR06005 with middle ear involvement. The precise contribution of these parasitic burdens to stranding in more severely affected animals is unknown. In case 03NWR05005, 03NWR05011, and possibly 03NWR05007, the intracochlear hemorrhage appears to be independent of peribullar parasitism and most likely reflects a sequel to trauma or some other entity and may be an artifact of postmortem migration and pooling. With the exception of case 03NWR05003 and 03NWR05007, the acousto-vestibular and facial nerves were intact and well defined. The etiopathogenesis of the degenerative changes noted in these two cases is likely related to post mortem change and freeze artifact. The middle ears of virtually all the examined heads appeared normal with

discrete middle ear spaces, intact ossicles, round and oval windows, and well defined normally distributed corpus cavernosum.

Body Composition

Detailed morphometric analysis and comparison with established reference values (McLellan *et al*, 2002) revealed that five of six animals analyzed (03NWR05001, 03NWR05005, 03NWR05008, 03NWR05011, and 03NWR05012) were within normal body condition and one animal (03NWR06005) was severely emaciated. Mild emaciation or mild cachexia was noted in 03NWR05008 and 03NWR05001. Extensive post mortem scavenging precluded body composition assessment in the remaining four whole animals; minimum estimates of total body mass were determined and are listed in Table 3.

Parasitology

Parasites have been implicated in strandings of several species of cetaceans, particularly where infection affected the ears, brain or auditory nerves, or was so overwhelming that an animal developed severe pneumonia or enteritis (Geraci and St. Aubin, 1987; Morimitsu *et al.*, 1987). Although fecal floatation and sedimentation were unremarkable within each of the examined porpoises, histopathology confirmed the verminous pneumonia and biliary trematodiasis in all 10 examined carcasses, subcutaneous nematodiasis in four of 10 (03NWR05007, 03NWR05008, 03NWR05012 and 03NWR06005) and gastrointestinal helminthiasis in four of 10 porpoises (03NWR05005, 03NWR05006, 03NWR05012 and 03NWR06005). The relative intensity and distribution of gastrointestinal parasites in this case series was consistent with previous studies. The trematodes noted within the stomach of 03NWR05007 likely originated from the hepatobiliary tree and were refluxed from the duodenum. The lack of discernible ova or parasites within ingesta may be due to intermittent shedding, post mortem decomposition or some other factor(s). The peribullar (presumptive *Stenurus* spp) and subcutaneous parasitism due to *Crassicauda* spp in 03NWR05012 was more intense in this individual than examined cohorts. The intensity and distribution of the hypodermal (presumptive *Crassicauda* spp), gastrointestinal (*Anisakis* spp) and peribullar (likely *Stenurus* spp) parasites was enhanced in 03NWR06005 relative to other stranded animals and may be secondary to profound debilitation. The cutaneous diatoms noted in 03NWR05007 and 03NWR05012 were considered incidental findings of limited pathologic significance.

Virology and Ancillary Molecular Studies

Pooled lung, lymph node, spleen and brain were evaluated for dolphin morbillivirus by PCR and all cases were negative. Tissue culture on Mabin Darby and Vero cell lines failed to reveal any cytopathic effect in all 10 cases. In select cases, negative staining electron microscopy of conjunctival and oral mucosal scrapes failed to reveal any virus like particles. Aspirates of the epididymal abscess in case 03NWR05008 were negative by PCR for marine mammal variant and universal *Brucella* spp and the intralesional parasitic ova were considered significant. In case 03NWR06005, cerebrospinal fluid had a titer of 1:16 for canine distemper by virus neutralization. Due to the extent of blood

contamination and hemolysis, this result was interpreted as a false positive. Follow up PCR for canine distemper was negative and immunohistochemistry of representative lung sections for Morbillivirus were unremarkable. This case was positive by PCR for Mollicutes, which are considered secondary to impaired respiratory defenses associated with the profound necrotizing pneumonia.

Blubber Analysis

Blubber samples were collected from eight animals (Table 4). Percent lipid values ranged from 44-83%, which are similar to those reported previously for blubber of harbor porpoises stranded off the west coast of the U.S. (Calambokidis and Barlow, 1991). Concentrations of POPs were comparable to levels previously reported in West Coast harbor porpoises (Calambokidis and Barlow, 1991; Jarman *et al*., 1996), and were much lower than those reported in presumably "healthy" harbor porpoises incidentally caught in a gill-net fishery off the northwest Atlantic coast (Tilbury *et al.*, 1997). The concentration of POPs in the harbor porpoises in this investigation were also significantly lower than that of a Southern Resident killer whale that stranded in Long Beach, Washington in April 2002 (NMFS/Northwest Fisheries Science Center, Environmental Conservation Division, unpub. data).

Bacteriology

Aerobic culture from multiple internal viscera of all 10 porpoises yielded pure to mixed, variable growth of 16 different species of bacteria with three cases that had no bacterial growth from select tissues (Table 5). Due to the lack of attendant inflammatory infiltrate, the *Clostridium perfringens* isolates from each of the 10 animals is attributed to post mortem overgrowth, and the most significant growth was the *Salmonella Newport* Group C2, from case 03NWR05006. *Escherichia coli* (non-hemolytic) was isolated from five cases, and alpha *Streptococcus* spp from four.

Trace Mineral and Vitamin A analysis

Trace mineral and vitamin A analysis of liver and kidney, with the exception of select samples, proved within normal limits (Table 6). Marginal increased liver magnesium were noted in three animals (03NWR05001, 03NWR05008, and 03NWR05011). These increased levels were not considered pathologically significant and increased calcium values in two porpoises (03NWR05005 and 03NWR05007) were considered secondary to dystrophic mineralization associated with the hepatobiliary trematodiasis. There was moderate reduction in liver vitamin A levels in one sample (03NWR05001), with no detectable levels in two additional animals (03NWR05005 and 03NWR06005). Due to the extent of post mortem change, it is difficult to resolve whether these reduced values represent post mortem degradation or hypovitaminosis A. Although there were no microscopic lesions consistent with vitamin A deficiency, the possibility of reduced levels and impaired immune function, particularly in case 03NWR06005, cannot be entirely discounted.

Stomach Prey Preliminary Analysis

Six of 10 examined stomachs lacked ingesta. Only scant fish bones, otoliths and squid beaks were identified in those animals with gastric contents. No freshly consumed prey

or prey tissue remains were present in any of the stomachs. A cursory examination of the otoliths and squid beaks during the preliminary sorting process revealed common prey items such as Pacific whiting (*Merluccius productus*) or pollock (*Theragra chalecogramma*), herring (*Clupea harengus pallasi*), sanddab (*Citharichthys sordidus*), an as yet unidentified sculpin (Cottidae) and market squid (Cephalopoda). No unusual prey remains were encountered, and the large number of empty stomachs and absence of freshly consumed prey is typical of findings over the last five years for evaluation of the stomach contents of stranded porpoises from the Pacific Northwest (W. Walker, pers comm.).

Pending Analyses

Detailed analysis of prey species and age determination from extracted teeth will be completed at the National Marine Mammal Laboratory, Seattle, Washington. Analyses of the behavioral reactions of marine mammals in response to sonar activities on 5 May 2003 will be conducted independently from this report. In addition, evaluation of exposure levels and cumulative effects from the sonar activities on marine mammals will be conducted separately.

DISCUSSION

The Stranding Network receives reports mostly from private citizens about stranded porpoises found on beaches or floating in the near-shore waters of Washington State in all months of the year. The number of reports received is subject to change according to beach attendance and public motivation/interest in responding to strandings. Stranding response in Washington State has increased in the past few years in part due to implementation of the Central Puget Sound Marine Mammal Stranding Network on Whidbey and Camano Islands in the late 1990s and through funding to support stranding network operations from the NMFS John H. Prescott Marine Mammal Rescue Assistance Grant Program.

Harbor porpoises are found along outer coastal beaches and around the inland waters of the state (Calambokidis *et al*., 1987; Calambokidis *et al*., 1997). The number of porpoise stranding events fluctuates annually and seasonally and varies by area. The majority of reported porpoise stranding events are dead animals and the number of animals reported varies seasonally and from year to year.

During the one month period from 2 May – 2 June, 2003, the Stranding Network received reports of 14 harbor porpoises dead on the beach, or floating along the outer coast, in the Strait of Juan de Fuca, and in the vicinity of Whidbey and San Juan Islands, in Washington. Several months following the investigation an additional report was submitted with information about a dead stranded harbor porpoise observed on 25 May on Lopez Island, bringing the total number of reports to 15. Of the 15 harbor porpoises, 13 animals stranded in the inland waters (*e.g.* east of the Pacific entrance to the Strait of Juan de Fuca) and two on the outer coast. In addition to the 15 harbor porpoises, one dead Dall's porpoise *(Phocoenoides dalli)* washed ashore briefly at Fidalgo Island on 14 May then was swept away by the tide (Figure 1, 03NWR05035). Dead porpoises were

also reported north of the U.S./Canada border, but were investigated separately (Appendix E).

Historically, spatial distribution of reported harbor porpoise stranding events has been highest in three main areas of the state where response effort and/or harbor porpoise density is greatest: (1) the San Juan Archipelago where there is both a high response effort and high density of porpoises; (2) Long Beach Peninsula where there is high population of private citizens during the summer months; and (3) the northwest corner of the state where there is high response effort. Between 1992 and 2002, there were 53 reports (80%) from the inland waters, compared to 13 reports from the outer coastal beaches (Table 9).

Table 9. Spatial distribution of harbor porpoise stranding events in Washington State for all months of the year (1992 –2003).

	Inland waters	**Outer coast**	**Totals**
Year			
1992	2	8	10
1993	6	2	8
1994	4	0	4
1995	5	0	5
1996	0	0	0
1997	2	0	2
1998	5	0	5
1999	2	0	2
2000	4	2	6
2001	14	1	15
2002	9	0	9
2003	19	6	25

Figure 1 shows the spatial distribution of the strandings of the animals included in this report. A majority (87%; n = 13) of harbor porpoise strandings took place in inland waters compared to the outer coast. More specifically, the inland water strandings were reported in three counties: (1) San Juan County (n = 5); (2) eastern Clallam County (n = 5); and (3) Island County (n = 3). All the strandings took place in May except one which occurred during the first week of June.

From January 1992 through December 2002, 66 harbor porpoise stranding events (in two of the reports, two animals stranded for a total of 68 individuals) were confirmed and/or investigated by members of the Network (NMFS, unpublished data – Appendix E). Annually, harbor porpoise stranding reports range from a low of zero in 1996 to a high of 15 in 2001 (Table 10). The mean yearly stranding event rate for harbor porpoises from

1992-2002 was 6.0 per year (SD = 6.1). In 2003, 25 stranded harbor porpoise events were reported. There was a significant difference between the number of harbor porpoise stranding events reported in 2003 compared to the mean number of stranding events reported over the previous 11 years (x^2 = 28.15, d.f. = 10, p = 0.002). When interpreting statistical analysis of stranding reports it is important to note that the sample size of reported porpoise strandings are relatively small and there are biases (*e.g*. variable geographic coverage, experience of responder) involved in the way data is collected by a predominantly volunteer stranding network.

Temporally, 27 (41%) of the total harbor porpoise strandings between 1992 and 2002 coincided with the late spring and early summer months (April - June) and ranged from a low of zero in 1996 to eight in 2001 (Table 10). Eight stranding events took place in April (30%), 16 in May (59%) and 3 in June (11%). The number of harbor porpoise strandings during April – June, 2003 was double the number reported in the previous highest year (2001). There was a significant difference between the number of harbor porpoise stranding events reported in April – May 2003 compared to the mean number of stranding events reported during the same months over the previous 11 years (x^2 = 22.33, d.f. = 10, p = 0.014). While this investigation focused on harbor porpoises that stranded in the time period surrounding the 5 May *USS SHOUP* activities, all marine mammal strandings which occurred from 1 April – 30 June (Appendix G) were also reviewed to look for any unusual stranding patterns.

Table 10. Harbor porpoise stranding events in Washington State 1992 – 2003 (April – June).

	April	May	June	Total		Total number events for year	Percent of annual stranding
Year							
1992	0	2	0	2		10	20
1993	1	2	1	4		8	50
1994	0	1	0	1		4	25
1995	2	0	0	2		5	40
1996	0	0	0	0		0	0
1997	0	1	0	1		2	50
1998	2	0	0	2		5	40
1999	0	1	0	1		2	50
2000	1	0	0	1		6	17
2001	1	7	0	8		15	53
2002	1	2	2	5		9	56
2003	1	14	1	16		25	64

Intensive post mortem examination and ancillary testing on 11 of the 15 harbor porpoises that stranded between 2 May and 2 June 2003 did not reveal any definitive signs of acoustic trauma that could be associated with the 5 May 2003 active mid-range tactical

sonar system used by the *USS SHOUP* or other reported acoustic events. Over 70 percent of the porpoises examined were graded by the team as moderate to advanced post mortem decomposition at the time of necropsy. A presumptive or definitive cause of death could be determined for five of 11 animals examined (Table 7). Of these five animals, there were two cases of agonal or perimortem blunt force trauma, a single case of fibrinous peritonitis, one porpoise with salmonellosis, and one with a profound necrotizing pneumonia. The examinations did not reveal any definitive signs of acoustic trauma in any of the porpoises examined. Inner ear trauma or noise-induced hearing loss could not be ruled out due to the condition of the carcasses. The multidisciplinary team noted that lesions consistent with acoustic trauma can be difficult to interpret or obscured, especially in animals in advanced post mortem decomposition.

Although, to the best of our knowledge, lesions associated with acoustic trauma have not been previously documented in harbor porpoises, sonar related strandings and pathology have been observed in other species. In March 2000, a multispecies mass stranding of 17 cetaceans (*Ziphius cavirostris, Mesoplodon densirostris, Balaenoptera acutorostrata, Stenella frontalis*) was discovered in the Bahamas (U.S. Depart. of Commerce and Secretary of the Navy, 2001). During the Bahamas event, stranded animals were found up to 36 hours after naval sonar deployment with most animals reported as live beachings within 12 hours of transit of multiple ships. Seven of the animals were known to have died and ten animals were returned to the water alive. In contrast, there were no live strandings of Washington porpoises, and animals were recovered sporadically throughout the entire month. From an epidemiologic perspective, the sample size is too small and biased to infer a specific relationship with respect to sonar usage and subsequent strandings.

The May 2003 increase in harbor porpoise strandings may be coincidental, biased by increased reporting efforts, and/or unrelated to sonar use. Observations of the May 5 sonar activities were highly publicized which could have resulted in increased awareness and reporting of porpoise strandings. In addition to the sonar activities on 5 May, hydrophone operators submitted audio files of sounds, they identified as sonar, dated 9 December 2002, 24 April 2003 and 4 May 2003. NMFS also received video footage labeled “porpoises and Navy Sonar 25 April 03”. There were, however, no reported strandings in December 2002 and only one harbor porpoise was reported stranded but not collected in April 2003. This could be biased by less intensive carcass monitoring and recovery efforts or other unknown factors. Prior to any publicity following 5 May, the Stranding Network, as part of its usual activities, was engaged in recovering stranded porpoises. Three of the 11 porpoises examined for cause of death in this investigation were recovered prior to 5 May, three on 5 and 6 May and the remaining five during the subsequent weeks. Clearly the sonar exercises of the *USS SHOUP* on 5 May could not have affected the animals collected prior to 5 May. However, in light of other reported events, all carcasses were thoroughly examined for possible links to sonar or other acoustic activities regardless of the date collected.

Determining the cause of death in an animal can be affected by various factors including carcass decomposition, handling, transport, and lack of clear or consistent gross or

microscopic findings, as well as the lack of validated (standardized) species specific diagnostic assays. In previous strandings associated with sonar, significant gross findings included acute hemorrhage within the inner ear, subarachnoid space, and lateral ventricles (U.S. Depart of Commerce and Secretary of the Navy, 2001). In a recent case report of stranded cetaceans in the Canary Islands, multisystemic intravascular microcavitations and emphysema formation were consistently observed (Jepson *et al*., 2003). In this porpoise investigation, the pathologies that were consistently identified within the examined harbor porpoises were related to post mortem change, freezing artifact, or were not considered sufficiently severe to account for the loss of these animals. Although seven porpoises were assigned a condition code of 2 (fresh) at time of initial observation, by the time the animals were collected, stored and then necropsied, most carcasses had undergone significant post mortem decomposition (Table 1).

Overlying the basi-occipital and cranial cervical regions of the spinal cord of five porpoises, as well as involving the retrobullar and peribullar spaces of seven individuals in this investigation, there was variable degrees of hemorrhage, with some hematoma formation (03NWR05001, 03NWR05005, 03NWR05008, 03NWR05011, 03NWR05012). Although these anatomic regions may be considered predilection sites for acoustic-related injury, in this case series, the hemorrhage and hematoma formation is most consistent with agonal thrashing associated with stranding, or intralesional nematode parasites. There was no consistent evidence of retrobullar, extra-ocular (two of eight examined animals), nor ventricular hemorrhage in the brain. Based on histopathology, the grossly noted submeningeal dark red fluid was considered unassociated with acute hemorrhage and more likely represented post mortem and cyclic freeze-thaw artifact. In one of nine animals, circumferentially involving the sub-epiglottic mucosa, there was moderate submucosal congestion with variable extravascular accumulation of proteinaceous material. Additional recuts and special stains failed to conclusively demonstrate hemoglobin and due to the extent of post mortem change, the precise nature of this material is unknown.

In this investigation, due to the number of people involved in responding to, collecting, transporting and thawing the carcasses, it was not possible to maintain a standardized approach to track body position or orientation during each of these procedures. Further, individual animals were stored in freezers of different types including frost-free freezers, which have freeze-thaw cycles, that were also considered a potential source for free blood or hemorrhagic artifact. Therefore, definitive differentiation amongst congestion, hypostasis, and red staining of tissues found during necropsy examinations (antemortem versus perimortem injury or post mortem dependent pooling) was hindered. The reddened tissue discoloration observed in all the animals was considered to be related to a combination of freezer artifact and autolytic (liquefactive) change.

In animals that present with no historical information or prior clinical evaluation and in advanced stages of autolysis, the precise cause of death cannot always be determined. Over the course of the last 4-5 years, a precise cause of death has not been determined in approximately 50% of necropsied animals from southern British Columbia and northern Washington State (S. Raverty, unpub. data). Post mortem decomposition or insufficient

time from the initial insult to development of histologically or grossly definitive lesions may hamper precise determination of a cause of death. Due to the state of decomposition and the very nature of strandings which provide only snapshots of information in the life an animal, comprehensive biological data on all important factors and acute or chronic disease state in any of these animals was not available.

CONCLUSION

Based on the stranding profile for the years 1992 to 2002, the number of harbor porpoise strandings in 2003 represented a statistically significant greater number of strandings than in previous years. Likewise, there was a significant difference between the numbers of harbor porpoise stranding events reported in April – May 2003 compared to the mean number of stranding events reported during the same months over the previous 11 years. No common cause for the increased number of harbor porpoise strandings observed in Washington State from 2 May – 2 June 2003 was found. A presumptive cause of death was determined for five of 11 harbor porpoises that were examined and/or scanned. Lesions consistent with or diagnostic for acoustic trauma were not identified in any of the 11 porpoises that were examined. The multidisciplinary team noted that lesions consistent with acoustic trauma can be difficult to interpret or obscured, especially in animals in advanced post mortem decomposition. The possibility of acoustic trauma as a contributory factor in the mortality of the porpoises examined could not be ruled out. Very little is known about acoustic trauma as a mortality factor in cetaceans and further investigation into its pathogenesis and impact is warranted. Furthermore, efforts to support the prompt and systematic search and recovery of stranded marine mammal carcasses in the region may benefit future such investigations, should they occur.

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LITERATURE CITED

Calambokidis, J. and Barlow, J. 1991. Chlorinated hydrocarbon concentrations and their use for describing population discreteness in harbor porpoises in Washington, Oregon, and California. In: Marine mammal strandings in the United States. Reynolds III, J.E. and Odell, D.K. (Eds.). Proceedings of the Second Marine Mammal Stranding Workshop, 3-5 December 1987, Miami, FL, pp. 101-110. U.S. Dep. Commerc., NOAA Tech. Rep. 98.

Calambokidis, J., Steiger, G.H., and J.C. Cubbage. 1987. Marine mammals in the southwestern Strait of Juan de Fuca: natural history and potential impacts of harbor development in Neah Bay. Final report prepared by Cascadia Research Collective, Olympia, WA, for the Seattle District, Army Corps of Engineers, Seattle, WA, Contract No. DACW67-85-M-0046, 103 p.

Calambokidis, J., Osmek, S., and Laake, J.L. 1997. Survey report for the 1997 aerial surveys for harbor porpoise and other marine mammals of Oregon, Washington, and British Columbia outside waters. Cascadia Research Collective, Olympia, Washington, USA. 36pp.

Calle, P.P., Stetter, M.D., Cook, R.A., McClave, C.A., and Massucci, S. 1995. Enteric salmonellosis of captive Pacific walrus (*Odobenus rosmarus divergens*), in *Proceedings of the 26th Annual Workshop of the International Association of Aquatic Animal Medicine*, 92-93.

Foster, G., Patterson, I.A., and Munro, D.S. 1999. Monophasic group B Salmonella species infecting harbour porpoises (*Phocoena phocoena*) inhabiting Scottish coastal waters. *Veterinary Microbiology* 65(3):227-231.

Gearin, P.J., Melin, S.R., DeLong, R.L., Kajimura, H. and Johnson, M.A. 1994. Harbor porpoise interactions with a Chinook salmon set-net fishery in Washington State. *Report of the International Whaling Commission* (special issue) 15:427-438.

Geraci, J.R. and St. Aubin, D.J. 1987. Effects of parasites on marine mammals. *International Journal for Parasitology* 17:407-414.

Geraci, J.R. and Lounsbury, V.J. 1993. Specimen and data collection. Pp. 175-228 *in* Marine Mammals Ashore: A Field Guide for Strandings, Geraci, J.R. and Lounsbury, V.J. (Eds.). Texas A&M Sea Grant Program, Galveston. 305pp.

Holmes, R.W, Nagasawa, S and Takano, H. 1993. The morphology and geographic distribution of epidermal diatoms of the Dall's porpoise (Phocoenoides dalli) in the northern Pacific ocean. *Bulletin of the National Science Museum, Tokyo, Series B* 19(1):1-18.

Jarman, W.M., Norstrom, R.J., Muir, D.C.G., Rosenberg, B., Simon, M. and Baird, R.W. 1996. Levels of organochlorine compounds, including PCDDs and PCDFs, in

the blubber of cetaceans from the West Coast of North America. *Marine Pollution Bulletin* 32:426-436.

Jepson, P.D., Arbelo, M., Deaville, R., Patterson, I.A.P., Castro, P., Baker, J.R., Degollada, E., Ross, H.M., Herráez, P., Pocknell, A.M., Rodríguez, F., Howie, F.E., Espinosa, A., Reid, R.J., Jaber, J.R., Martin, V., Cunningham, A.A. and Fernández, A. 2003. Gas-bubble lesions in stranded cetaceans. *Nature* 425: 575.

McLellan, W.A., Koopman, H.N., Rommel, S.A., Read, A.J., Potter, C.W., Westgate, A.J. and Pabst, D.A. 2002. Ontogenetic allometry and body composition of harbour porpoises (*Phocoena phocoena*, L.) from the western North Atlantic. *Journal of Zoology, London* 257(4):457-472.

Morimitsu, T., Nagai, T., Ide, M., Kawano, H., Naichuu, A., Koono, M. and Ishii, A. 1987. Mass stranding of odontocete caused by parasitogenic eight cranial neuropathy. *Journal of Wildlife Diseases* 23:586-590.

Raga, J., Aznar, F., Balbuena, J. and Fernandez, M. 2002. Parasites. Pp 867-876 *in* Encyclopedia of marine mammals, first edition, Perrin, W.F., Würsig, B. and Thewissen, J.G. (Eds.). Academic Press, San Diego, CA. 1414 pp.

Read, A. J. and Murray, K.T. 2000. Gross evidence of human-induced mortality in small cetaceans. NOAA Technical Memorandum NMFS-OPR-15. 21pp.

Reidarson, T.H., McBain, J.F., Dalton, L.M. and Rinaldi, M.G. 2001. Mycotic diseases. Pp. 337-355 *in* Handbook of marine mammal diseases, second edition, Dierauf, L.A. and Gulland, F.M.D. (Eds.). CRC Press, Boca Raton, FL. 1063 pp.

Schroeder, R.J., Delli Ouadre, C.A., McIntyre, R.W., and Walker, W.A. 1973. Marine mammal disease surveillance program in Los Angeles County. *Journal of the American Veterinary Medical Association* 163(6): 580-581.

Sloan, C.A., Brown, D.W., Pearce, R.W., Boyer, R.H., Bolton, J.L., Burrows, D.G., Herman, D.P. and Krahn, M.M. In press. Determining aromatic hydrocarbons in sediments and tissues using accelerated solvent extraction and gas chromatography/mass spectrometry. *In*: Aquatic Toxicology-Volume 2, Ostrander, G.K. (Ed.). CRC Press, Boca Raton, FL.

Smith, W.A, Mazet, J.A. and Hirsh, D.C. 2002. Salmonella in California wildlife species: prevalence in rehabilitation centers and characterization of isolates. *Journal of Zoo and Wildlife Medicine* 33(3):228-235

Thornton, S.M., Nolan, S. and Gulland, F.M.D. 1998. Bacterial isolates from California sea lions (*Zalophus californianus*), harbor seals (*Phoca vitulina*) and northern elephant seals (*Mirounga angustirostris*) admitted to a rehabilitation center along the central California coast. *Journal of Zoo and Wildlife Medicine* 29:171-176.

Tilbury, K.L., Stein, J.E., Meador, J.P., Krone, C.A. and Chan, S.-L. 1997. Chemical contaminants in harbor porpoise (*Phocoena phocoena*) from the north Atlantic coast: tissue concentrations and intra- and inter-organ distribution. *Chemosphere* 34(9/10):2159-2181.

United State Department of Commerce and the Secretary of the Navy. 2001. Joint Interim Report: Bahamas Marine Mammal Stranding Event of 15-16 March 2000. 59 pp.

United States Navy. 2004. Report on the Results of the Inquiry into Allegations of Marine Mammal Impacts surrounding the Use of Active Sonar by USS SHOUP (DDG 86) in the Haro Strait on or about 5 May 2003. 52pp.

GLOSSARY

Agonal: Occurring at the moment of or just before death.

Antemortem: Before death.

Anterior: Situated in front of or in the forward part of an organ, toward the head end of the body.

Atelectasis: The collapse of part or all of a lung by blockage of the air passages (bronchus or bronchioles), or by very shallow breathing.

Autolyzed: Enzymatic, bacterial or self-digestion of cells or tissues after death.

Avulsed: Torn off from.

Basioccipital: Pertaining to the back of the skull or head.

Commensal: Living in a state of commensalism which is a relation between two kinds of organisms in which one obtains food or other benefits from the other without damaging or benefiting it.

Comminuted: Reduced to small particles.

Computerized tomography: The creation of an image displaying anatomic information, created by a computer synthesis of x-ray transmission data obtained in several different directions in a given plane.

Congestion: Excessive or abnormal accumulation of fluid (e.g., blood) in a tissue or organ.

Contusion: An injury of a part without a break in the skin; a bruise.

Diffuse: Widely distributed.

Dura mater: The outermost (and toughest) of the three membranes (meninges) covering the brain and spinal cord.

Ectatic: Distended or dilated.

Edema: An abnormal infiltration and excess accumulation of serous fluid in connective tissue.

Erythema: Abnormal redness of the skin due to vascular congestion and hyperemia.

Etiology: The cause(s) or origin of a disease.

Extravasation: A discharge or escape, as of blood, from a vessel into the tissues.

Fascia: A band or sheet of fibrous tissue deep to the skin.

Florid: In full bloom; occurring in fully developed form.

Fibrosis: The formation of a scar.

Gross findings: Observations of organs and tissues that are visible to the naked eye.

Hemorrhage: The escape of blood from the vessels (often associated with an organized clot). The effect of hemorrhage depends on the rate, volume and location of the bleeding.

Histological findings: The branch of anatomy that deals with the minute structure, composition, and function of these tissues (histopathological findings: the histology of diseased tissues).

Hypostasis: The gravitational settling of blood in the dependent parts of an organ or body.

Imbibe: Absorb a liquid (such as blood).

Inferior: Situated below, or directed downward; used in reference to the lower surface of an organ or structure.

Inguinal: Of, relating to, or found in the groin.

Lesion: Wound, injury, or pathological change in a tissue.

Lividity: Discoloration of dependent parts due to the gravitation of blood.

Morbidity: Condition of being diseased or sick.

Morphology: The science of the form and structure of organisms, organs and tissues.

Necrosis: The sum of the morphological changes indicative of cell degeneration and death and caused by a complex disruption and progression of subcellular processes. It may affect groups of cells or part of a structure or an organ.

Parenchyma: The functional elements of an organ (as distinguished from its framework, or stroma).

Pathology: The branch of science concerned with all aspects of disease, especially the essential nature of disease, with special reference to the structural and functional changes in tissues and organs of the body which cause or are caused by disease.

Per os: By mouth.

Peribullar: Around the bullae, the tissues and space surrounding the bony housing of the ear.

Perimortem: Around the time of death.

Peritonitis: Refers to inflammation of the peritoneum, a membrane that covers the surfaces of both the organs that lie in the abdominal cavity and the inner surface of the abdominal cavity itself.

Perivascular: Situated around a vessel.

Petechial: Characterized by pinpoint, nonraised, well delineated, purplish red spots caused by intradermal or submucosal bleeding.

Pia mater: The innermost of the three membranes (meninges) covering the brain and spinal cord.

Post mortem: After death.

Posterior: Situated in back of, or in the back part of, or affecting the back part of a structure.

Pulmonary: Pertaining to the lungs.

Purulent: Containing, consisting of, or being pus.

Sequela: A consequence of disease or injury.

Serosa: An enclosing thin membrane.

Significant finding: A finding that would be expected to have a nontrivial negative impact on the health of an animal.

Subcutaneous: Beneath the skin (includes the epidermis and dermis [blubber]).

Superior: Situated above, or directed upward.

Vitreous humor: Fluid contained within the eye.

Figure 1. Reported porpoise strandings in Washington State 2 May - 2 June 2003 (Courtesy of B. Hanson)

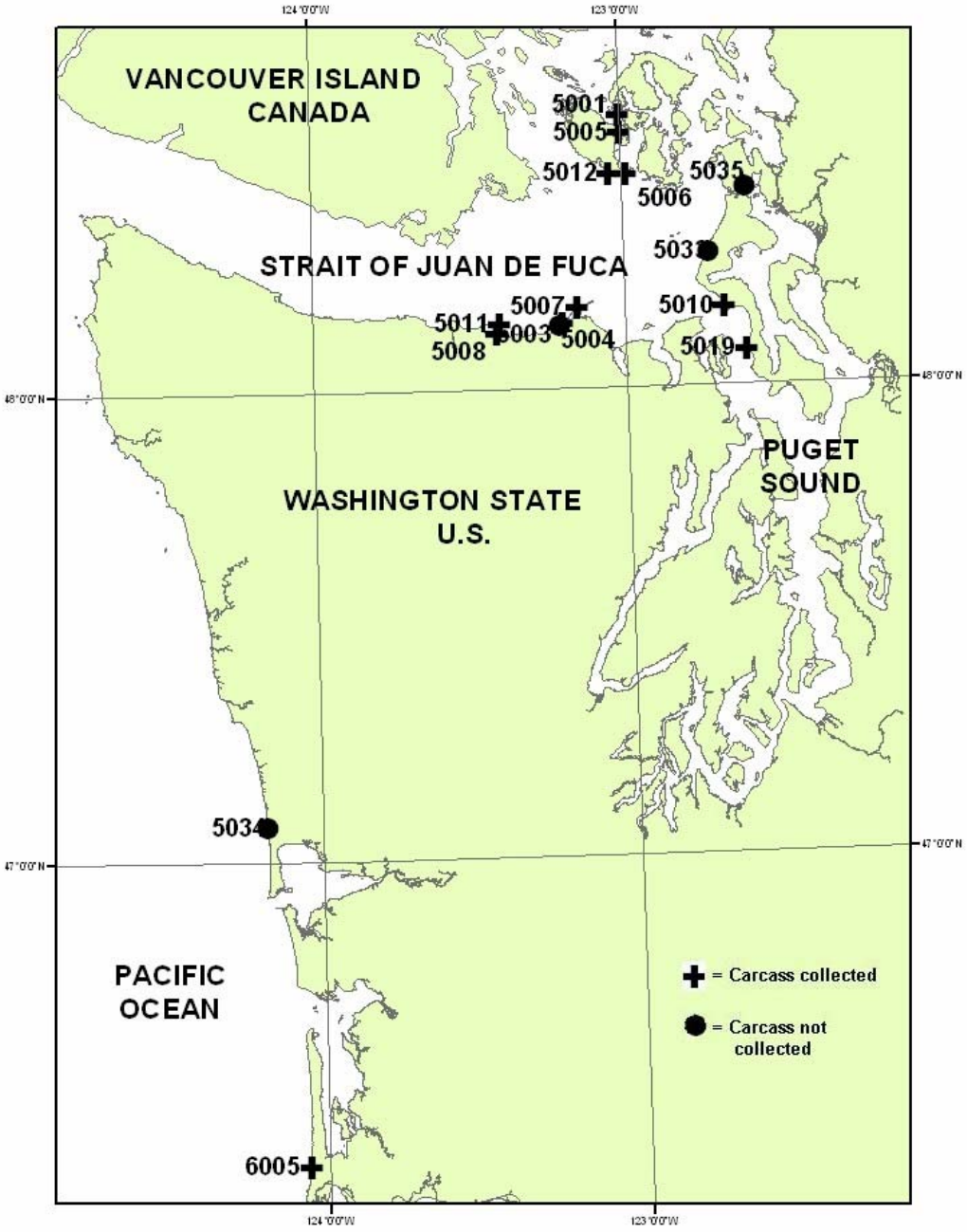


Table 1. Reported harbor porpoise stranding events in Washington State – 2 May to 2 June 2003.

Date of initial observation	Location	County	Initial carcass cond-ition	Field ID	Registration number	Sex	Date collected	CT Scan 7/20/03	Necropsy date	Carcass condition code at necropsy	Cause of death
5/2/2003	Neck Point, Shaw Island	San Juan	2	2003-SJ006	03NWR05001	F	5/2/2003	yes	7/23/2003	3	Not determined
5/4/2003	County Park, Dungeness Spit	Clallam	4	DNG-03-002	03NWR05003	F	05/08/03 head & fetus collected	yes	N/E	4+	N/E
5/4/2003	County Park, Dungeness Spit	Clallam	4	N/E	03NWR05004	U	not collected	no	N/E	N/E	N/E
5/4/2003	Jackson Beach, San Juan Island	San Juan	3	2003-SJ007	03NWR05005	F	5/5/2003	no	7/24/2003	3	Not determined
5/5/2003	South Beach, San Juan Island	San Juan	3	2003-SJ008	03NWR05006	F	5/5/2003	yes	7/23/2003	3	Salmonella septicemia
5/6/2003	Dungeness Spit	Clallam	2	DNG-03-001	03NWR05007	F	5/6/2003	yes	7/22/2003	2+	Not determined
5/6/2003	Ennis Creek, Discovery Trail	Clallam	3	OCNMS03Pp01	03NWR05008	M	5/6/2003	yes	7/23/03-head; 7/24/03-body	4	Not determined (peritonitis maybe contributory)
5/12/2003	West Beach, Whidbey Island	Island	unknown	N/E	03NWR05033	U	not collected	no	N/E	N/E	N/E
5/12/2003	Ocean City	Grays Harbor	3	N/E	03NWR05034	U	not collected	no	N/E	N/E	N/E
5/13/2003	Admiralty Head, Whidbey Island	Island	2	WIC051303SD	03NWR05010	M	5/13/2003	no	7/24/2003	3+	Not determined (likely occipital base fracture)
5/16/2003	Ediz Hook, Port Angeles	Clallam	2	OCNMS03Pp02	03NWR05011	F	5/16/2003	yes	7/23/2003	3	Cranial fractures
5/17/2003	Lagoon Point, Whidbey Island	Island	2	WIE051703SB	03NWR05019	F	5/17/2003	no	7/23/2003	3	Not determined
5/20/2003	Eagle Point, San Juan Island	San Juan	2	2003-SJ009	03NWR05012	M	5/20/2003	yes	7/23/2003	2	Not determined
5/25/03	Flint Beach, SJ I	San Juan	4	2003-SJ020	03NWR05046	U	not collected	No	N/E	N/E	N/E
6/2/2003	Long Beach	Pacific	2	CRC-490	03NWR06005	M	6/2/2003	yes	7/22/2003	2	Bronchopneumonia

2 = fresh, 3 = moderate decomposition, 4 = advanced decomposition

Table 2. Freezer type and specifications used to store and transport harbor porpoise carcasses prior to necropsy.

Manufacturer/Model	Type (top-load/chest vs. walk-in)	Location	Cycle type	Carcass Number(s)
Kalt Thermoguard	Walk-in	NOAA/National Marine Mammal Lab (Building 4)	Frost-free (-20 - 0 F)	03NWR05012
Horeco (model unknown)	Walk-in	NOAA/National Marine Mammal Lab (Building 32)	Frost-free	All specimens
Kenmore 11233	Top-load	University of Washington/Friday Harbor Laboratory	Manual defrost	03NWR05001 03NWR05005 03NWR05006
Kenmore (model unknown)	Top-load	Center for Whale Research	Manual defrost	03NWR05012
Kenmore 13551	Top-load	NOAA/Office of Protected Resources	Manual defrost	03NWR05001 03NWR05003 03NWR05006 03NWR05007 03NWR05008 03NWR05011 03NWR05012 03NWR06005
Kenmore 67519231796	Top-load	USFWS/Dungeness National Wildlife Refuge	Manual defrost	03NWR05007

Table 3. Body composition of harbor porpoises (*Phocoena phocoena*) examined at necropsy. Comparative "normal" data are from Atlantic harbor porpoises presented in McLellan *et al*. (2002).

ID #	Sex	TL (cm)	TBM (kg)	Blubber mass (kg)	"Normal" blubber mass (kg)	Blubber /TBM (%)	"Normal" blubber /TBM (%)	Axial muscle mass (kg)	"Normal" axial muscle mass (kg)	Axial muscle /TBM (%)	"Normal" axial muscle /TBM (%)	Notes
03NMR05001	F	136	39*	**N/E**	10.88 +/- 1.17	**CBD**	29.47 +/- 3.16	**7.39**	8.44 +/- 1.94	**CBD**	21.65 +/- 2.41	Scavenger damage limited blubber and % analyses
												Axial muscle mass within normal range
03NWR05005	F	126	33.5*	**13.59**	10.88 +/- 1.18	**CBD**	29.47 +/- 3.17	**6.44**	8.44 +/- 1.95	**CBD**	21.65 +/- 2.41	Blubber mass higher than normal
												Axial muscle mass slightly below normal range
03NWR05006	F	152	48.5*	**N/E**		**CDB**		**N/E**		**CBD**		Severe decomposition and scavenger damage
03NWR05007	F	145.5	38.5*	**N/E**				**7.56**	**8.44 +/- 1.95			**This animal is longer than the normal sample
												in McLellan *et al.* 2002
03NWR05008	M	146	N/E	**N/E**	12.79 +/- 1.69	**CBD**	24.69 +/- 2.46	**N/E**	11.54 +/- 1.76	**CBD**	24.59 +/- 2.03	Severe decomposition
03NWR05010	M	154	N/E	**N/E**		**CBD**		**N/E**		**CBD**		Severe decomposition and scavenger damage
03NWR05011	F	136.5	37*	**12.72**	10.88 +/- 1.18	**CBD**	29.47 +/- 3.17	**6.70**	8.44 +/- 1.95	**CBD**	21.65 +/- 2.41	Scavenger damage limited % analyses
												Blubber mass higher than normal
												Axial muscle mass within normal range
03NWR05019	F	138	37.5*	**N/E**		**CBD**		**N/E**		**CBD**		Decomposition and scavenger damage
03NWR05012	M	123	30	**9.15**	10.00 +/- 1.70	**29.7**	29.62 +/- 2.04	**5.36**	6.98 +/- 1.19	**17.9**	20.06 +/- 2.04	Total mass of this specimen slightly below that of
												normal range for immature males (34.7 +/- 4.5 kg)
												Blubber within normal range
												Axial muscle below normal range
03NWR06005	M	146	39	**8.98**	12.79 +/- 1.69	**23.03**	24.69 +/- 2.46	**8.08**	11.54 +/- 1.76	**20.71**	24.59 +/- 2.03	Total mass of this specimen below that of normal
												range for mature males (47.1 +/- 4.9 kg)
												Blubber mass, axial muscle mass and
												Axial muscle/TBM(%) below normal range

If scavenger damage precluded collecting blubber and/or axial mass on both sides, reported values represent 2 times the value for a single side. Blubber and axial muscles are bilaterally symmetric (McLellan *et al.* 2002).

* = Minimum estimate of total body mass (TBM) due to tissue loss or carcass decomposition.

TL = Total length

CBD = Could not be determined

Table 4. Concentrations of selected persistent organic pollutants measured in blubber of harbor porpoises stranded at various sites in Washington State (May – June 2003).

Registration number	Sex	Age class†	Length (cm)	Carcass condition	Percent lipid	ng/g, wet weight					ng/g, lipid weight				
						β-HCH	HCB	∑CHLDs	∑DDTs	∑PCBs	β-HCH	HCB	∑CHLDs	∑DDTs	∑PCBs
03NWR05005	F	Immature	126	Mod. dec.§	74	400	430	1,200	5,600	5,900	540	580	1,600	7,600	8,000
03NWR05001	F	Immature	136	Fresh	68	190	190	560	2,300	2,600	280	280	820	3,400	3,800
03NWR05011	F	Immature	137	Fresh	75	240	210	640	3,100	3,000	320	280	850	4,100	4,000
03NWR05019	F	Immature	138	Fresh	75	230	270	670	2,700	3,700	310	360	890	3,600	3,600
03NWR05006	F	Immature	152	Mod. dec.§	83	270	280	730	3,400	3,400	330	340	880	4,100	4,100
03NWR05007	F	Immature	146	Fresh	70	330	330	980	4,400	5,800	470	470	1,400	6,300	8,300
03NWR05012	M	Immature	123	Fresh	69	310	250	880	3,800	4,500	450	360	1,300	5,500	6,500
					Overall immature mean ± SE	*280 ± 29*	*280 ± 33*	*810 ± 92*	*3,600 ± 460*	*4,100 ± 540*	*390 ± 41*	*380 ± 44*	*1,100 ± 130*	*4,900 ± 640*	*5,500 ± 850*
03NWR06005	M	Adult	146	Fresh	44	250	39	1,200	5,700	6,800	570	89	2,700	13,000	15,000

¶Results of analyses from Environmental Conservation Division, NWFSC, NMFS, Seattle, WA

†Age class of each animal estimated from length data using information from Gearin PJ, Melin SR, DeLong RL, Kajimura H, Johnson MA (1994)

§Mod. dec. = moderately decomposed

Table 5. Bacteriology results for harbor porpoise specimens.

Bacteria Isolated	03NWR05001	03NWR05005	03NWR05006	03NWR05007
***Acinetobacter* sp.**			kidney, thymus, mesenteric l.n.	
Actinetobacter johnsonii	thymus, thoracic fluid			
Aeromonas hydrophila		spleen, thymus, lung, spinal cord, liver, hilar l.n., mediastinal l.n.		
Clostridium perfringens	small intestine	intestine	small intestine	small intestine
***Enterobacter* sp.**		spleen, thymus, spinal cord, liver, hilar l.n., mediastinal l.n.		brain, mammary gland, spleen, spinal cord, thymus, hemothorax, mesenteric l.n., lung
***Enterococcus* sp.**				
***Escherichia coli* - non hemolytic**	small intestine, thymus, spleen, kidney, liver, mesenteric l.n.			
***Moraxella* sp.**				
***Proteus* sp.**	mesenteric l.n.			
Pseudomonas sp.	small intestine, thymus, spleen, mediastinal l.n., lung, mesenteric l.n., spinal cord	spleen, liver, hilar l.n.		
Pseudomonas flourescens				lung
***Psychrobacter* sp.**				
Raoultella terrigena				
***Salmonella newport* Group C2**			Hilar l.n., kidney, lung, spleen, liver, thymus, mesenteric l.n., small intestine	
***Streptococcus* (non-hemolytic)**				mammary milk
***Streptococcus* sp.(alpha)**	small intestine	intestine		
no bacteria isolated		kidney, urine		

Table 5. Bacteriology results for harbor porpoise specimens.

Bacteria Isolated	03NWR05008	03NWR05010	03NWR05011	03NWR05019	03NWR05012	03NWR06005
***Acinetobacter* sp.**						
Actinetobacter johnsonii						
Aeromonas hydrophila		liver, kidney, mesenteric l.n., lung, brain, spleen		spleen, lumbar l.n., kidney, liver, brain, spinal cord, lung, pericolic l.n., small intestine		
Clostridium perfringens	small intestine	small intestine	small intestine, colon	small intestine	small intestine	large intestine
***Enterobacter* sp.**	lungs, spleen, mesenteric l.n, epididymis abscess					
***Enterococcus* sp.**		liver, kidney, mesenteric l.n., lung, brain, spleen, small intestine	liver, thymus, spleen, mesenteric l.n., urine, kidney, lung, spinal cord			
***Escherichia coli* - non hemolytic**	kidney, lungs, mesenteric l.n.	liver, kidney, mesenteric l.n., lung, brain, spleen, small intestine	kidney, lung, spinal cord, small intestine, colon		spinal cord, lung, kidney, small intestine	
***Moraxella* sp.**						prescapular l.n., brain, kidney, spleen
***Proteus* sp.**						
Pseudomonas sp.						
Pseudomonas flourescens						
***Psychrobacter* sp.**				spleen, lumbar l.n., kidney, liver, brain, sp. cord, lung, pericolic l.n., small intestine		
Raoultella terrigena						liver, prescapular l.n., brain, mesenteric l.n., spleen, lung, liver swab, kidney
***Salmonella newport* Group C2**						
***Streptococcus* (non-hemolytic)**	liver					
***Streptococcus* sp.(alpha)**	kidney, lungs, spleen, mesen. l.n., sm. int. epididymis abscess				mediastinal l.n., lung, kidney	
no bacteria isolated					liver, spleen	abdominal fluid

Table 6. Trace mineral and Vitamin A analyses of liver, kidney and vitreous humor.

	03NWR 05001	03NWR 05005	03NWR 05006	03NWR 05007	03NWR 05008	03NWR 05010	03NWR 05011	03NWR 05012	03NWR 05019	03NWR 06005		Reference range (Porpoise and dolphin)	
LIVER													
Se (ppm)	2.98	1.99	1.6	4.24	12.43	5.93	2.11	2.92	3.19	10.56		0.90-38.0	
Cu (ppm)	8	5	8	6.3	10.2	5.9	9	12	12.6	12.9		4.0-60.0	
Zn (ppm)	59	25	40	27	36	47	62	41	56	84		22-120	
Fe (ppm)	**307**	221	212	230	261	278	210	225	228	236		130-300	
Mn (ppm)	5.8	3.8	4.6	3.5	5.7	5	6.5	4.9	4.8	5.5		1.0-10.0	
Pb (ppm)	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**	**<2**		<1.0	
Cd (ppm)	0.2	<0.2	<0.2	<0.2	0.3	0.3	<0.2	<0.2	<0.2	0.6		<0.1-12.0	
Ca (ppm)	92	**314**	49	**302**	78	96	133	65	39	46		38-200	
Mg (ppm)	**330**	166	192	203	**410**	**511**	260	219	194	210		130-280	
Vit A (mcg/g)	120	**51**	714	340	355	1011	520	800	298	<5		250-3000	
Retinol (mcg/g)	82	35	457	219	172	710	318	419	186	<3			
Retinol palmitate (mcg/g)	46	16	256	120	183	301	202	381	112	<3			
KIDNEY													
Cu (ppm)	3.3	4.1	4	5.9	4.8	4.1	4.2	6.2	5.3	3.8		3.0-7.9	
Zn (ppm)	24	27	26	26	25	28	28	29	26	25		16-44	
Fe (ppm)	146	115	158	112	215	151	123	106	159	69		90-150	
Mn (ppm)	1.5	1.5	1.7	1.6	2.5	1.4	1.5	1.5	1.6	1.6		1.0-3.0	
Pb (ppm)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2		<1.0	
Cd (ppm)	0.5	0.2	0.6	0.5	1.1	0.9	0.2	0.5	0.4	2.4		0.08-72.0	
Ca (ppm)	154	79	179	148	323	98	167	134	127	160		60-150	
Mg (ppm)	371	152	251	193	351	137	193	170	280	185		120-240	
VITREOUS													**Reference range (cattle)**
Ca (mg/dl)		8.8		6.4		7.7		5.3	8	5.8			6.0-7.5
Mg (mg/dl)		10.32		7.04		20.79		5.24	10.4	4.94			1.9
P (mg/dl)		37		72		64		40	46	51		1.9-2.7	1.3-3.0
BUN (mg/dl)		54.5		73.9		57		113.4	52.1	59.8			9-16(serum)

Bold type indicates value(s) outside of reference range.

Table 7. Summary of post mortem findings in harbor porpoises stranded in Washington State (2 May – 2 June 2003).

Field Number	03NWR05001	03NWR05005	03NWR05006	03NWR05007	03NWR05008	03NWR05010	03NWR05011	03NWR05012	03NWR05019	03NWR06005
Findings										
Human interaction						MC*	MC*			
Emaciation					+ IF	+ IF				+++ MC
Factures										
Occipital bone						++ MC				
Cranium							++++ LC			
Inner ears										
Intracochlear hemorr.				+ IF			++ MC			
Peribullar hemorrhage	++ IF	+ IF	++ MC		+ IF	+ IF		++ MC		+++ MC
Salmonellosis			++ LC							
Spinal cord										
Clot formation	+ IF	++ IF			+ IF		+ IF	++ IF		
Skin										
Diatoms				+ IF				+ IF		
Lung										
Pneumonia										++++ LC
Colon										
Hypertrophy										++++ MC
Abdominal Cavity										
Peritonitis/serositis			+ MC		++ MC					
Epididymis										
Abscess					+ IF					
Parasites										
Lung worm	+ IF	+ IF	++ IF	+ IF	++ IF	+ IF	+ IF	+ IF	++ IF	+++ MC
Biliary	+ IF	++ IF	+ IF	++ IF	++ IF	+ IF	++ IF	++ IF	++ IF	++ IF
Subcutaneous				+ IF	++ IF			++ IF		+++ IF
Gastrointestinal		+ IF	+++ IF					+ IF		+++ IF
Peribullar	/+ F	+ IF			++/+ IF	++/++ IF	++/+ IF	+++/+++ (MC)	++/++ IF	+++/+++ IF
Intracranial								+++ (MC)		

Legend:	Severity of condition	Contribution to death of animal		left/right side of animal
+	mild	LC	Likely the cause of death	
++	moderate	MC	May be the cause of death/May have contributed to death	
+++	marked	IF	Incidental finding (not linked to cause of death)	
++++	severe	* Speculative - could be due to predation.		

Table 8. Summary table of CT scan results.

Anatomic Site	Case Number	
	03NWR05001	**03NWR05003**
Ears		
Peribullar regions		
left	extensive parasitism and good pneumatization	Aerated and normal
right	clot formation and good pneumatization	Aerated and normal
Internal Auditory Canal		
left	well defined and intact	canals normal
right	well defined and intact	canals normal
Acouto-Vestibular/ Fascial Nerve		
left	intact and well defined	partially degenerate nerves
right	intact and well defined	partially degenerate nerves
Middle ear		
left	no significant findings, distinct middle ear spaces and well defined corpus cavernosum	Aerated, retracted corpus cavernosum, intact ossicles, round and oval windows
right	no significant findings, distinct middle ear spaces and well defined corpus cavernosum	Aerated, retracted corpus cavernosum, intact ossicles, round and oval windows
Inner ear		
left	canals symmetric and normal	symmetric and apparently normal canals
right	canals symmetric and normal	symmetric and apparently normal canals

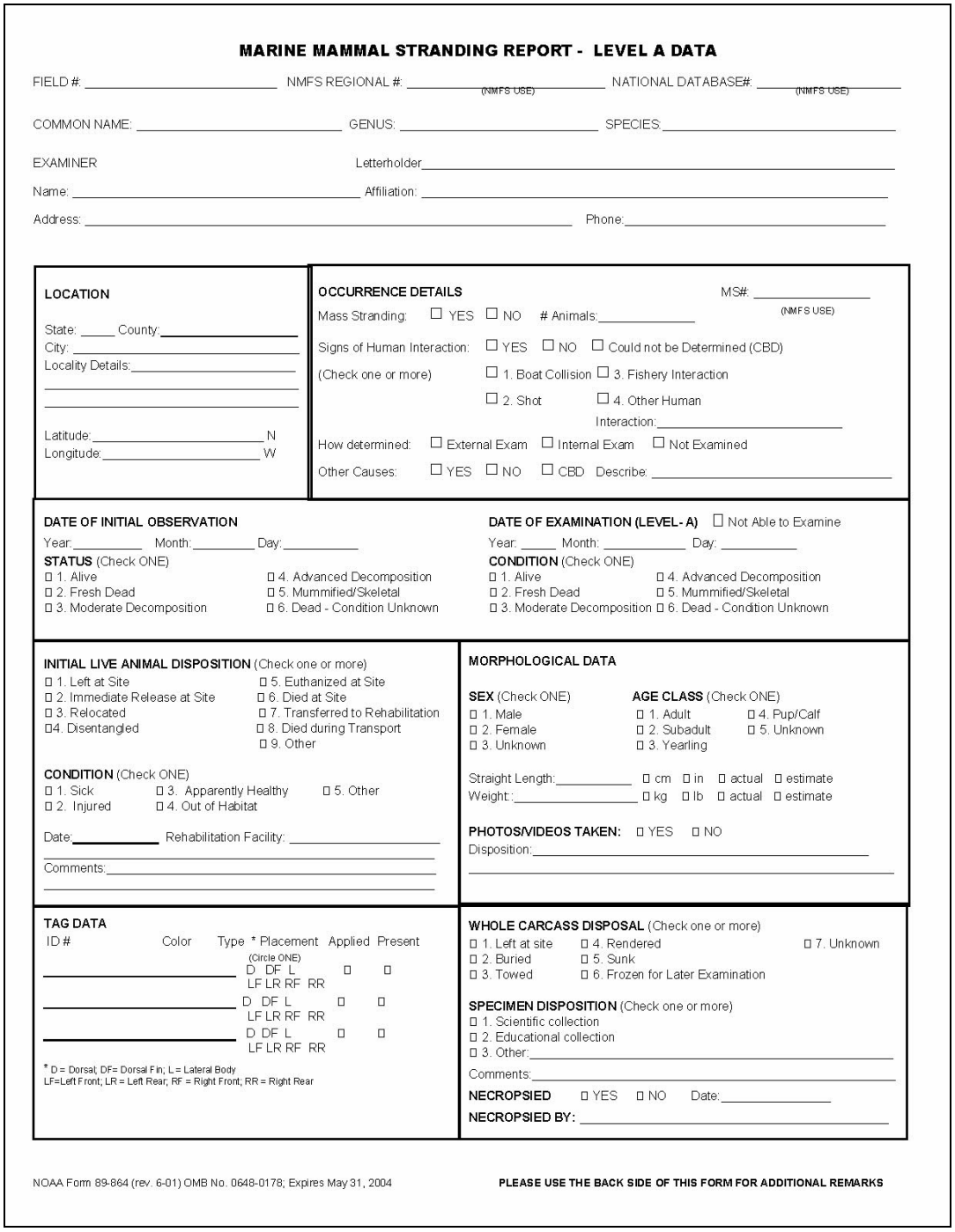
Table 8. Summary table of CT scan results.

Anatomic Site	Case Number	
	03NWR05006	**03NWR05007**
Ears		
Peribullar regions		
left	well aerated and normal	clear and well aerated, well defined suspensory ligament
right	dorsal retrobullar space, extensive hemorrhage	clear and well aerated, well defined suspensory ligament
Internal Auditory Canal		
left	no evidence of hemorrhage or parasitism, left tympanic bone partially demineralized	no evidence of blood or abnormal material
right	intact and well defined canal	no evidence of blood or abnormal material
Acouto-Vestibular/ Fascial Nerve		
left	internal auditory canal well defined	intact, but in some sections, degenerative change evident
right	intact and well defined	intact, but in some sections, degenerative change evident
Middle ear		
left	normal with distinct middle ear space and well defined corpus cavernosum, round and oval windows normal	distinct air spaces, well defined corpus cavernosum, normal ossicles and round windows
right	normal with distinct middle ear space and well defined corpus cavernosum	distinct air spaces, well defined corpus cavernosum, normal ossicles and round windows
Inner ear		
left	no significant findings	canals symmetric and normal, possible intracochlear blood
right	no significant findings	canals symmetric and normal, possible intracochlear blood

Table 8. Summary table of CT scan results

Anatomic Site		**Case Number**		
	03NWR05008	**03NWR05011**	**03NWR05012**	**03NWR06005**
Ears				
Peribullar regions				
left	generally clear, well aerated, substantial parasitism	two masses (organized clot and moderate parasitism) and bone fractures	intact, moderate density parasitic masses and no other significant findings	extensive parasitism
right	generally clear, well aerated, moderate parasitism	no significant findings	intact and no significant findings	extensive parasitism
Internal Auditory Canal				
left	normal and unremarkable	no significant findings	intact and no significant findings	no significant findings
right	normal and unremarkable	no significant findings	intact and no significant findings	no significant findings
Acouto-Vestibular/ Fascial Nerve				
left	normal	no significant findings	intact and no significant findings	no significant findings
right	normal	no significant findings	intact and no significant findings	no significant findings
Middle ear				
left	clearly delineated air spaces and well defined corpus cavernosum	no significant findings	intact and no significant findings	extensive parasitism
right	clearly delineated air spaces and well defined corpus cavernosum	no significant findings	intact and no significant findings	extensive parasitism
Inner ear				
left	symmetric and normal, normal intracochlear fluid	in apical and middle turns, blood	normal, no evidence of blood or other intracochlear abnormalities	no significant findings
right	symmetric and normal, normal intracochlear fluid	in apical and middle turns, blood	normal, no evidence of blood or other intracochlear abnormalities	no significant findings

Appendix A. – Level A stranding form



MARINE MAMMAL STRANDING REPORT - LEVEL A DATA

FIELD #: _____ NMFS REGIONAL #: _____ (NMFS USE) NATIONAL DATABASE#: _____ (NMFS USE)

COMMON NAME: _____ GENUS: _____ SPECIES: _____

EXAMINER Letterholder: _____

Name: _____ Affiliation: _____

Address: _____ Phone: _____

LOCATION

State: _____ County: _____
City: _____
Locality Details: _____
_____
_____

Latitude: _____ N
Longitude: _____ W

OCCURRENCE DETAILS MS#: _____ (NMFS USE)

Mass Stranding: ☐ YES ☐ NO # Animals: _____

Signs of Human Interaction: ☐ YES ☐ NO ☐ Could not be Determined (CBD)

(Check one or more) ☐ 1. Boat Collision ☐ 3. Fishery Interaction
☐ 2. Shot ☐ 4. Other Human Interaction: _____

How determined: ☐ External Exam ☐ Internal Exam ☐ Not Examined

Other Causes: ☐ YES ☐ NO ☐ CBD Describe: _____

DATE OF INITIAL OBSERVATION

Year: _____ Month: _____ Day: _____

STATUS (Check ONE)
☐ 1. Alive ☐ 4. Advanced Decomposition
☐ 2. Fresh Dead ☐ 5. Mummified/Skeletal
☐ 3. Moderate Decomposition ☐ 6. Dead - Condition Unknown

DATE OF EXAMINATION (LEVEL- A) ☐ Not Able to Examine

Year: _____ Month: _____ Day: _____

CONDITION (Check ONE)
☐ 1. Alive ☐ 4. Advanced Decomposition
☐ 2. Fresh Dead ☐ 5. Mummified/Skeletal
☐ 3. Moderate Decomposition ☐ 6. Dead - Condition Unknown

INITIAL LIVE ANIMAL DISPOSITION (Check one or more)
☐ 1. Left at Site ☐ 5. Euthanized at Site
☐ 2. Immediate Release at Site ☐ 6. Died at Site
☐ 3. Relocated ☐ 7. Transferred to Rehabilitation
☐ 4. Disentangled ☐ 8. Died during Transport
☐ 9. Other

CONDITION (Check ONE)
☐ 1. Sick ☐ 3. Apparently Healthy ☐ 5. Other
☐ 2. Injured ☐ 4. Out of Habitat

Date: _____ Rehabilitation Facility: _____
_____
Comments: _____
_____

MORPHOLOGICAL DATA

SEX (Check ONE)
☐ 1. Male
☐ 2. Female
☐ 3. Unknown

AGE CLASS (Check ONE)
☐ 1. Adult ☐ 4. Pup/Calf
☐ 2. Subadult ☐ 5. Unknown
☐ 3. Yearling

Straight Length: _____ ☐ cm ☐ in ☐ actual ☐ estimate
Weight: _____ ☐ kg ☐ lb ☐ actual ☐ estimate

PHOTOS/VIDEOS TAKEN: ☐ YES ☐ NO
Disposition: _____
_____

TAG DATA

ID #	Color	Type	* Placement (Circle ONE)	Applied	Present
_____		D DF L	LF LR RF RR	☐	☐
_____		D DF L	LF LR RF RR	☐	☐
_____		D DF L	LF LR RF RR	☐	☐

* D = Dorsal; DF= Dorsal Fin; L = Lateral Body
LF=Left Front; LR = Left Rear; RF = Right Front; RR = Right Rear

WHOLE CARCASS DISPOSAL (Check one or more)
☐ 1. Left at site ☐ 4. Rendered ☐ 7. Unknown
☐ 2. Buried ☐ 5. Sunk
☐ 3. Towed ☐ 6. Frozen for Later Examination

SPECIMEN DISPOSITION (Check one or more)
☐ 1. Scientific collection
☐ 2. Educational collection
☐ 3. Other: _____

Comments: _____

NECROPSIED ☐ YES ☐ NO Date: _____

NECROPSIED BY: _____

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PLEASE USE THE BACK SIDE OF THIS FORM FOR ADDITIONAL REMARKS

Appendix B. – Level A stranding forms for stranded harbor porpoises 2 May – 2 June 2003

MARINE MAMMAL STRANDING REPORT

NW-2003-1000774 SID# _____ (NMFS USE)

To Sean 7/20

FIELD NO.: 2003-SJ006 NMFS REGISTRATION NO.: 03NWR05001

COMMON NAME: Harbor porpoise GENUS: Phocoena SPECIES: phocoena

EXAMINER Name: J. Gaydos Agency: The Whale Museum Phone: 360 378-4710

Address: PO Box 945 Friday Harbor WA

LOCATION

State: WA County: San Juan

City: _____

Locality Details: Floating off Neck Pt., Shaw Island

*Latitude: _____ N

*Longitude: _____ W

TYPE OF OCCURRENCE

Mass Stranding: ☐ Yes ☒ No # Animals _____

Human Interaction: ☐ Yes ☐ No ☒ ?

Check one:
- ☐ 1. Boat Collision
- ☐ 2. Shot
- ☐ 3. Fishery Interaction
- ☐ 4. Other _____

How determined: _____

Other Causes (if known): _____

DATE OF INITIAL OBSERVATION:

Yr. 2003 Mo. 5 Day 2

CONDITION: Check one:
- ☐ 1. Alive
- ☒ 2. Fresh dead
- ☐ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

DATE OF EXAMINATION:

Yr. 2003 Mo. 5 Day 2

CONDITION: Check one:
- ☐ 1. Alive
- ☒ 2. Fresh dead
- ☐ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

LIVE ANIMAL — Condition and Disposition:

Check one or more:
- ☐ 1. Released at site
- ☐ 2. Sick
- ☐ 3. Injured
- ☐ 4. Died
- ☐ 5. Euthanized
- ☐ 6. Rehabilitated and released
- ☐ ?. Unknown

Transported to: _____

☐ Died ☐ Released Date: _____

6/23/03

TAGS APPLIED?: ☐ Yes ☒ No

TAGS PRESENT?: ☐ Yes ☒ No

	Dorsal	Left	Right
Tag No.(s):			
Color(s):			
Type:			
Placement		Front/Rear	Front/Rear

CARCASS — Disposition:

Check one:
- ☐ 1. Left at site
- ☐ 2. Buried
- ☐ 3. Towed
- ☒ 4. Sci. collection: (see below)
- ☐ 5. Edu. collection: (see below)
- ☐ 6. Other _____
- ☐ ?. Unknown

NECROPSIED? ☒ Yes ☐ No 7/23/03

MORPHOLOGICAL DATA:

Sex — Check one:
- ☐ 1. Male
- ☒ 2. Female Immature
- ☐ ?. Unknown

Straight Length: 136 ☐ cm ☐ in ☐ est

*Weight 39 ☐ kg ☐ lb ☐ est

PHOTOS TAKEN? ☒ Yes * ☐ No

* during necropsy

REMARKS: Collected for necropsy. Stored in FHL freezer

DISPOSITION OF TISSUE/SKELETAL MATERIAL: _____

To scan 7/2
To rotten

MARINE MAMMAL STRANDING REPORT – LEVEL A DATA

FIELD #: DNG-03-002 NMFS REGIONAL #: 03NWR05003 (NMFS USE) NATIONAL DATABASE #: NW-2003-1000776 (NMFS USE)

COMMON NAME: porpoise GENUS: __________ SPECIES: __________

EXAMINER Letterholder: __________

Name: Pam Sanguinetti Affiliation: USFWS

Address: 33 S. Barr Rd Port Angeles WA 98362 Phone: 360 457 8451

LOCATION

State: WA County: Clallam

City: Sequim

Locality Details: 1 mile S. of Dungeness Spit

Latitude: 48° 08' 19.9" N

Longitude: 123° 11' 52.6" W

OCCURRENCE DETAILS MS#: ______ (NMFS USE)

Mass Stranding: ☐ YES ☒ NO # Animals: ______

Signs of Human Interaction: ☐ YES ☐ NO ☒ Could Not be Determined (CBD)

(Check one or more) ☐ 1. Boat Collision ☐ 2. Shot ☐ 3. Fishery Interaction ☐ 4. Other Human Interaction: ______

How determined: ☐ External Exam ☐ Internal Exam ☐ Not Examined

Other Causes: ☐ YES ☐ NO ☐ CBD Describe: ______

DATE OF INITIAL OBSERVATION

Year: 2003 Month: 05 Day: 04

STATUS *(Check ONE)*

☐ 1. Alive ☐ 2. Fresh Dead ☒ 3. Moderate Decomposition ☐ 4. Advanced Decomposition ☐ 5. Mummified/Skeletal ☐ 6. Dead – Condition Unknown

DATE OF EXAMINATION (LEVEL A) ☐ Not Able to Examine

Year: 2003 Month: 05 Day: 08

CONDITION *(Check ONE)*

☐ 1. Alive ☐ 2. Fresh Dead ☐ 3. Moderate Decomposition ☒ 4. Advanced Decomposition ☐ 5. Mummified/Skeletal ☐ 6. Dead – Condition Unknown

INITIAL LIVE ANIMAL DISPOSITION *(Check one or more)*

☐ 1. Left at Site ☐ 2. Immediate Release at Site ☐ 3. Relocated ☐ 4. Disentangled ☐ 5. Euthanized at Site ☐ 6. Died at Site ☐ 7. Transferred to Rehabilitation ☐ 8. Died During Transport ☐ 9. Other

CONDITION *(Check ONE)*

☐ 1. Sick ☐ 2. Injured ☐ 3. Apparently Healthy ☐ 4. Out of Habitat ☐ 5. Other

Date: ______ Rehabilitation Facility: ______

Comments: ______

MORPHOLOGICAL DATA

SEX *(Check ONE)*: ☐ 1. Male ☒ 2. Female ☐ 3. Unknown

AGE CLASS *(Check ONE)*: ☒ 1. Adult ☐ 2. Subadult ☐ 3. Yearling ☐ 4. Pup/Calf ☐ 5. Unknown

Straight Length: 200 ☒ cm ☐ in ☐ actual ☒ estimate

Weight ______ ☐ kg ☐ lb ☐ actual ☐ estimate

PHOTOS/VIDEOS TAKEN: ☒ YES ☐ NO ATTAched

Disposition: ______

TAG DATA

ID#	Color	Type	*Placement (Circle One)	Applied	Present
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐

*D=Dorsal; DF=Dorsal Fin; L=Lateral Body
LF=Left Front; LR=Left Rear; RF=Right Front; RR=Right Rear

WHOLE CARCASS DISPOSAL *(Check one or more)*

☒ 1. Left at Site ☐ 2. Buried ☐ 3. Towed ☐ 4. Rendered ☐ 5. Sunk ☐ 6. Frozen for Later Examination ☐ 7. Unknown

SPECIMEN DISPOSITION *(Check one or more)*

☒ 1. Scientific Collection CT Scan only of head
☐ 2. Educational Collection
☐ 3. Other: ______ *

Comments: Removed head/fetus*
gave to Brad – NMFS

NECROPSIED ☐ YES ☒ NO Date: ______

NECROPSIED BY: ______

6/3/03

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OMB No. 0648-0178, Expires May 31, 2004

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MARINE MAMMAL STRANDING REPORT – LEVEL A DATA

FIELD #: DN6 03 003 NMFS REGIONAL #: 03NWR050 (NMFS USE) NATIONAL DATABASE #: (NMFS USE)

COMMON NAME: harbor porpoise GENUS: Phocoena SPECIES: phocoena

EXAMINER Letterholder:

Name: Pam Sanguinetti Affiliation: U.S. Fish & Wildlife Service

Address: 33 S. Barr Rd Port Angeles WA 98362 Phone: 360 457 8451

LOCATION

State: WA County: Clallam

City: Sequim

Locality Details: 2 miles South of Dungeness Spit boa

Latitude: N

Longitude: W

OCCURRENCE DETAILS

MS#: (NMFS USE)

Mass Stranding: ☐ YES ☒ NO # Animals:

Signs of Human Interaction: ☐ YES ☐ NO ☐ Could Not be Determined (CBD)

(Check one or more) ☐ 1. Boat Collision ☐ 3. Fishery Interaction ☐ 2. Shot ☐ 4. Other Human Interaction:

How determined: ☐ External Exam ☐ Internal Exam ☐ Not Examined

Other Causes: ☐ YES ☐ NO ☐ GBD Describe:

DATE OF INITIAL OBSERVATION

Year: 2003 Month: 5 Day: 4 By Refuge visitors

STATUS (Check ONE)

☐ 1. Alive
☐ 2. Fresh Dead
☐ 3. Moderate Decomposition
☒ 4. Advanced Decomposition Described as Scavenged
☐ 5. Mummified/Skeletal
☐ 6. Dead – Condition Unknown

DATE OF EXAMINATION (LEVEL A)

☒ Not Able to Examine

Year: Month: Day: Could not Locate

CONDITION (Check ONE)

☐ 1. Alive
☐ 2. Fresh Dead
☐ 3. Moderate Decomposition
☐ 4. Advanced Decomposition
☐ 5. Mummified/Skeletal
☐ 6. Dead – Condition Unknown

INITIAL LIVE ANIMAL DISPOSITION (Check one or more)

☐ 1. Left at Site
☐ 2. Immediate Release at Site
☐ 3. Relocated
☐ 4. Disentangled
☐ 5. Euthanized at Site
☐ 6. Died at Site
☐ 7. Transferred to Rehabilitation
☐ 8. Died During Transport
☐ 9. Other

CONDITION (Check ONE)

☐ 1. Sick ☐ 3. Apparently Healthy ☐ 5. Other
☐ 2. Injured ☐ 4. Out of Habitat

Date: Rehabilitation Facility:

Comments:

MORPHOLOGICAL DATA

SEX (Check ONE)
☐ 1. Male
☐ 2. Female
☐ 3. Unknown

AGE CLASS (Check ONE)
☐ 1. Adult ☐ 4. Pup/Calf
☒ 2. Subadult ☐ 5. Unknown
☐ 3. Yearling

Straight Length: ☐ cm ☐ in ☐ actual ☐ estimate

Weight ☐ kg ☐ lb ☐ actual ☐ estimate

PHOTOS/VIDEOS TAKEN: ☒ YES ☒ NO

Disposition: described as smaller than 2nd animal – ? < 84cm

TAG DATA

ID#	Color	Type	*Placement (Circle One)	Applied	Present
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐

ADDITIONAL DETAILS

*D=Dorsal; DF=Dorsal Fin; L=Lateral Body
LF=Left Front; LR=Left Rear; RF=Right Front; RR=Right Rear

WHOLE CARCASS DISPOSAL (Check one or more)

☒ 1. Left at Site
☐ 2. Buried
☐ 3. Towed
☐ 4. Rendered
☐ 5. Sunk
☐ 6. Frozen for Later Examination
☐ 7. Unknown

SPECIMEN DISPOSITION (Check one or more)

☐ 1. Scientific Collection
☐ 2. Educational Collection not collected
☐ 3. Other:

Comments:

NECROPSIED: ☐ YES ☒ NO Date:

NECROPSIED BY:

6/23/03

MARINE MAMMAL STRANDING REPORT

NW-2003-1000778 SID# _____ (NMFS USE)

FIELD NO.: 2003-SJ007 NMFS REGISTRATION NO.: 03AIWR05005

COMMON NAME: Harbor Porpoise GENUS: Phocoena SPECIES: phocoena

EXAMINER Name: R. Osborne Agency: The Whale Museum Phone: 360 378-4710

Address: PO Box 945 Friday Harbor WA

LOCATION

State: WA County: San Juan

City: _____

Locality Details: Jackson Beach, San Juan Island

*Latitude: _____ N

*Longitude: _____ W

TYPE OF OCCURRENCE

Mass Stranding: ☐ Yes ☒ No # Animals 1

Human Interaction: ☒ Yes ☐ No ☒ ?

Check one:
- ☐ 1. Boat Collision
- ☐ 2. Shot
- ☒ 3. Fishery Interaction
- ☐ 4. Other _____

How determined: Tangled in Fishing Net

Other Causes (if known): _____

DATE OF INITIAL OBSERVATION: Yr. 2003 Mo. 5 Day 4

CONDITION: Check one:
- ☐ 1. Alive
- ☐ 2. Fresh dead
- ☒ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

DATE OF EXAMINATION: Yr. 2003 Mo. 5 Day 5

CONDITION: Check one:
- ☐ 1. Alive
- ☐ 2. Fresh dead
- ☒ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

LIVE ANIMAL — Condition and Disposition:

Check one or more:
- ☐ 1. Released at site
- ☐ 2. Sick
- ☐ 3. Injured
- ☐ 4. Died
- ☐ 5. Euthanized
- ☐ 6. Rehabilitated and released
- ☐ ?. Unknown

Transported to: _____

☐ Died ☐ Released Date: _____

TAGS APPLIED?: ☐ Yes ☐ No

TAGS PRESENT?: ☐ Yes ☐ No

	Dorsal	Left	Right
Tag No.(s):			
Color(s):			
Type:			
Placement		Front/Rear	Front/Rear

CARCASS — Disposition:

Check one:
- ☐ 1. Left at site
- ☐ 2. Buried
- ☐ 3. Towed
- ☒ 4. Sci. collection: (see below)
- ☐ 5. Edu. collection: (see below)
- ☐ 6. Other _____
- ☐ ?. Unknown

NECROPSIED? ☒ Yes ☐ No 7/24/03

6/23/03

MORPHOLOGICAL DATA:

Sex — Check one:
- ☐ 1. Male
- ☒ 2. Female (immature)
- ☐ ?. Unknown

Straight Length: 126 ☒ cm ☐ in ☐ est

*Weight 33.5 ☒ kg ☐ lb ☐ est

PHOTOS TAKEN? ☒ Yes ☐ No

REMARKS: Collected for Necropsy. Stored in FHL freezer.

DISPOSITION OF TISSUE/SKELETAL MATERIAL: _____

MARINE MAMMAL STRANDING REPORT

NW-2003-1000779
SID# _____ (NMFS USE)

FIELD NO.: 2003-SJ008 NMFS REGISTRATION NO.: 03NWR05006 To Scan 7 PG

COMMON NAME: Harbor porpoise GENUS: Phocoena SPECIES: phocoena

EXAMINER Name: Whale Museum Agency: _____ Phone: _____

Address: _____

LOCATION

State: WA County: San Juan

City: _____

Locality Details: South Beach, San Juan Island

*Latitude: _____ N

*Longitude: _____ W

TYPE OF OCCURRENCE

Mass Stranding: ☐ Yes ☒ No # Animals 1

Human Interaction: ☐ Yes ☐ No ☒ ?

Check one:
- ☐ 1. Boat Collision
- ☐ 2. Shot
- ☐ 3. Fishery Interaction
- ☐ 4. Other _____

How determined: _____

Other Causes (if known): _____

DATE OF INITIAL OBSERVATION:

Yr. 2003 Mo. 5 Day 5

CONDITION: Check one:
- ☐ 1. Alive
- ☐ 2. Fresh dead
- ☒ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

DATE OF EXAMINATION:

Yr. 2003 Mo. 5 Day 5

CONDITION: Check one:
- ☐ 1. Alive
- ☐ 2. Fresh dead
- ☒ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

LIVE ANIMAL — Condition and Disposition:

Check one or more:
- ☐ 1. Released at site
- ☐ 2. Sick
- ☐ 3. Injured
- ☐ 4. Died
- ☐ 5. Euthanized
- ☐ 6. Rehabilitated and released
- ☐ ?. Unknown

Transported to: _____

☐ Died ☐ Released Date: _____

TAGS APPLIED?: ☐ Yes ☒ No

TAGS PRESENT?: ☐ Yes ☒ No

	Dorsal	Left	Right
Tag No.(s):			
Color(s):			
Type:			
Placement		Front/Rear	Front/Rear

CARCASS — Disposition:

Check one:
- ☐ 1. Left at site
- ☐ 2. Buried
- ☐ 3. Towed
- ☒ 4. Sci. collection: (see below)
- ☐ 5. Edu. collection: (see below)
- ☐ 6. Other _____
- ☐ ?. Unknown

NECROPSIED? ☒ Yes ☐ No 7/23/03

6/23/03

MORPHOLOGICAL DATA:

Sex — Check one:
- ☐ 1. Male
- ☒ 2. Female
- ☐ ?. Unknown

adult

Straight Length: 152 cm ☒ cm ☐ in ☐ est

*Weight 48.5 kg ☒ kg ☐ lb ☒ est

PHOTOS TAKEN? ☒ Yes * ☐ No

*during necropsy

REMARKS: Collected for necropsy. Stored in FHL freezer.

DISPOSITION OF TISSUE/SKELETAL MATERIAL: _____

MARINE MAMMAL STRANDING REPORT – LEVEL A DATA

FIELD #: DNG 03 001 NMFS REGIONAL #: 03NWR05007 (NMFS USE) NATIONAL DATABASE #: NW-2003-100071 (NMFS USE)

COMMON NAME: harbor porpoise GENUS: Phocoena SPECIES: phocoena

EXAMINER

Name: Pam Sanguinetti Letterholder:

Affiliation: U.S. Fish + Wildlife Service

Address: 33 S. Barr Rd Port Angeles WA 98362 Phone: 360 457 8451

LOCATION

State: WA County: Clallam

City: Sequim

Locality Details: Dungeness National Wildlife Refuge

Latitude: 48°10'21.4" N

Longitude: 123° 09' 08.8" W

OCCURRENCE DETAILS

MS#: (NMFS USE)

Mass Stranding: ☐ YES ☒ NO # Animals:

Signs of Human Interaction: ☐ YES ☐ NO ☒ Could Not be Determined (CBD)

(Check one or more) ☐ 1. Boat Collision ☐ 3. Fishery Interaction ☐ 2. Shot ☐ 4. Other Human Interaction:

How determined: ☐ External Exam ☐ Internal Exam ☐ Not Examined

Other Causes: ☐ YES ☐ NO ☐ CBD Describe:

DATE OF INITIAL OBSERVATION

Year: 03 Month: 05 Day: 06

STATUS *(Check ONE)*

☐ 1. Alive ☐ 4. Advanced Decomposition

☒ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

DATE OF EXAMINATION (LEVEL A) ☐ Not Able to Examine

Year: 03 Month: 05 Day: 06

CONDITION *(Check ONE)*

☐ 1. Alive ☐ 4. Advanced Decomposition

☒ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

INITIAL LIVE ANIMAL DISPOSITION *(Check one or more)*

☐ 1. Left at Site ☐ 5. Euthanized at Site

☐ 2. Immediate Release at Site ☐ 6. Died at Site

☐ 3. Relocated ☐ 7. Transferred to Rehabilitation

☐ 4. Disentangled ☐ 8. Died During Transport

☐ 9. Other

CONDITION *(Check ONE)*

☐ 1. Sick ☐ 3. Apparently Healthy ☐ 5. Other

☐ 2. Injured ☐ 4. Out of Habitat

Date: Rehabilitation Facility:

Comments:

6/23/03

MORPHOLOGICAL DATA

SEX *(Check ONE)*

☐ 1. Male

☒ 2. Female

☐ 3. Unknown

AGE CLASS *(Check ONE)*

☒ 1. Adult ☐ 4. Pup/Calf

☒ 2. Subadult ☐ 5. Unknown

☐ 3. Yearling

Straight Length: 145.5 ☒ cm ☐ in ☒ actual ☒ estimate

Weight 38.5 ☒ kg ☐ lb ☒ actual ☐ estimate

PHOTOS/VIDEOS TAKEN: ☒ YES ☐ NO

Disposition:

TAG DATA

ID#	Color	Type	*Placement (Circle One)	Applied	Present
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐

*D=Dorsal; DF=Dorsal Fin; L=Lateral Body
LF=Left Front; LR=Left Rear; RF=Right Front; RR=Right Rear

WHOLE CARCASS DISPOSAL *(Check one or more)*

☐ 1. Left at Site ☐ 4. Rendered ☐ 7. Unknown

☐ 2. Buried ☐ 5. Sunk

☐ 3. Towed ☒ 6. Frozen for Later Examination

SPECIMEN DISPOSITION *(Check one or more)*

☒ 1. Scientific Collection

☐ 2. Educational Collection

☒ 3. Other: given to Brad Hansen, NOAA for Necropsy

Comments:

NECROPSIED ☒ YES ☐ NO Date:

NECROPSIED BY: 7/22/03

PLEASE USE BACK SIDE OF THIS FORM FOR ADDITIONAL REMARKS

MARINE MAMMAL STRANDING REPORT – LEVEL A DATA

To Scan 7/2 Yes

FIELD #: OCNMS03 Pg 01 NMFS REGIONAL #: (NMFS USE) NW-2003-000781 NATIONAL DATABASE #: (NMFS USE)

COMMON NAME: Harbor Porpoise GENUS: Phocoena SPECIES: phocoena

EXAMINER

Name: Mary Sue Brancato Affiliation: Olympic Coast National Marine Sanctua

Address: 115 E Railroad, Port Angeles WA Phone: 360 457-6622 x20

LOCATION

State: WA County: Clallam

City: Port Angeles

Locality Details: On Discovery trail east of MP 2 at river delta/bridge.

Latitude: N

Longitude: W

OCCURRENCE DETAILS

MS#: (NMFS USE)

Mass Stranding: ☐ YES ☒ NO # Animals:

Signs of Human Interaction: ☐ YES ☒ NO ☐ Could Not be Determined (CBD)

(Check one or more) ☐ 1. Boat Collision ☐ 3. Fishery Interaction ☐ 2. Shot ☐ 4. Other Human Interaction:

How determined: ☒ External Exam ☐ Internal Exam ☐ Not Examined

Other Causes: ☐ YES ☐ NO ☐ CBD Describe:

DATE OF INITIAL OBSERVATION

Year: 2003 Month: 5 Day: 26

STATUS *(Check ONE)*

☐ 1. Alive ☐ 4. Advanced Decomposition

☐ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☒ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

DATE OF EXAMINATION (LEVEL A) ☐ Not Able to Examine

Year: Month: Day:

CONDITION *(Check ONE)*

☐ 1. Alive ☐ 4. Advanced Decomposition

☐ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

INITIAL LIVE ANIMAL DISPOSITION *(Check one or more)*

☐ 1. Left at Site ☐ 5. Euthanized at Site

☐ 2. Immediate Release at Site ☐ 6. Died at Site

☐ 3. Relocated ☐ 7. Transferred to Rehabilitation

☐ 4. Disentangled ☐ 8. Died During Transport

☐ 9. Other

CONDITION *(Check ONE)*

☐ 1. Sick ☐ 3. Apparently Healthy ☐ 5. Other

☐ 2. Injured ☐ 4. Out of Habitat

Date: Rehabilitation Facility:

Comments:

MORPHOLOGICAL DATA

SEX *(Check ONE)*

☒ 1. Male ☐ 2. Female ☐ 3. Unknown

AGE CLASS *(Check ONE)*

☒ 1. Adult ☐ 4. Pup/Calf ☐ 2. Subadult ☐ 5. Unknown ☐ 3. Yearling

Straight Length: 146 ☒ cm ☐ in ☒ actual ☐ estimate

Weight 40 ☒ kg ☐ lb ☐ actual ☒ estimate

PHOTOS/VIDEOS TAKEN: ☒ YES ☐ NO

Disposition: Cut off head & froze for scanning. Delivered by Polly Ramirez to NMFS – Brad Hanson

TAG DATA

ID#	Color	Type	*Placement (Circle One)	Applied	Present
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐

*D=Dorsal; DF=Dorsal Fin; L=Lateral Body
LF=Left Front; LR=Left Rear; RF=Right Front; RR=Right Rear

WHOLE CARCASS DISPOSAL *(Check one or more)*

☒ 1. Left at Site except head ☐ 4. Rendered ☐ 7. Unknown

☐ 2. Buried ☐ 5. Sunk

☐ 3. Towed ☐ 6. Frozen for Later Examination

SPECIMEN DISPOSITION *(Check one or more)*

☒ 1. Scientific Collection

☐ 2. Educational Collection

☐ 3. Other:

Comments: Timing near Canadian Navy Test Fires collected for scanning.

NECROPSIED ☒ YES ☐ NO Date: head 7/22/03 body 7/23/03.

NECROPSIED BY:

7/23/03

ADDITIONAL REMARKS

ADDITIONAL IDENTIFIER: _____

First called in by woman (Janine at PA Acupuncture center) when she saw it on Tuesday 5/6. — took her awhile to find right contact. She contacted the Sanctuary on 5/9/03.

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MARINE MAMMAL STRANDING REPORT – LEVEL A DATA

FIELD #: 03-GH-159 NMFS REGIONAL #: 03NWR05034 (NMFS USE) NATIONAL DATABASE #: NW-2003-102845 (NMFS USE)

COMMON NAME: Harbor Porpoise GENUS: Phocoena SPECIES: phocoena

EXAMINER

Name: Cascadia Research Letterholder: Affiliation:

Address: Phone:

LOCATION

State: WA County: Grays Harbor

City: Ocean City

Locality Details:

Latitude: N

Longitude: W

OCCURRENCE DETAILS

MS#: (NMFS USE)

Mass Stranding: ☐ YES ☒ NO # Animals: 1

Signs of Human Interaction: ☐ YES ☐ NO ☒ Could Not be Determined (CBD)

(Check one or more) ☐ 1. Boat Collision ☐ 3. Fishery Interaction ☐ 2. Shot ☐ 4. Other Human Interaction:

How determined: ☐ External Exam ☐ Internal Exam ☒ Not Examined

Other Causes: ☐ YES ☐ NO ☒ CBD Describe:

DATE OF INITIAL OBSERVATION

Year: 03 Month: 05 Day: 12

STATUS *(Check ONE)*

☐ 1. Alive ☐ 4. Advanced Decomposition

☐ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☒ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

DATE OF EXAMINATION (LEVEL A)

☒ Not Able to Examine

Year: Month: Day:

CONDITION *(Check ONE)*

☐ 1. Alive ☐ 4. Advanced Decomposition

☐ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

INITIAL LIVE ANIMAL DISPOSITION *(Check one or more)*

☐ 1. Left at Site ☐ 5. Euthanized at Site

☐ 2. Immediate Release at Site ☐ 6. Died at Site

☐ 3. Relocated ☐ 7. Transferred to Rehabilitation

☐ 4. Disentangled ☐ 8. Died During Transport

☐ 9. Other

CONDITION *(Check ONE)*

☐ 1. Sick ☐ 3. Apparently Healthy ☐ 5. Other

☐ 2. Injured ☐ 4. Out of Habitat

Date: Rehabilitation Facility:

Comments:

MORPHOLOGICAL DATA

SEX *(Check ONE)*

☐ 1. Male

☐ 2. Female

☒ 3. Unknown

AGE CLASS *(Check ONE)*

☐ 1. Adult ☐ 4. Pup/Calf

☐ 2. Subadult ☒ 5. Unknown

☐ 3. Yearling

Straight Length: ☐ cm ☐ in ☐ actual ☐ estimate

Weight ☐ kg ☐ lb ☐ actual ☐ estimate

PHOTOS/VIDEOS TAKEN: ☐ YES ☒ NO

Disposition:

TAG DATA

ID#	Color	Type	*Placement *(Circle One)*	Applied	Present
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐

*D=Dorsal; DF=Dorsal Fin; L=Lateral Body
LF=Left Front; LR=Left Rear; RF=Right Front; RR=Right Rear

WHOLE CARCASS DISPOSAL *(Check one or more)*

☒ 1. Left at Site ☐ 4. Rendered ☒ 7. Unknown

☐ 2. Buried ☐ 5. Sunk

☐ 3. Towed ☐ 6. Frozen for Later Examination

SPECIMEN DISPOSITION *(Check one or more)*

☐ 1. Scientific Collection

☐ 2. Educational Collection

☐ 3. Other:

Comments: not collected

NECROPSIED ☐ YES ☒ NO Date:

NECROPSIED BY:

6/2/04

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PLEASE USE BACK SIDE OF THIS FORM FOR ADDITIONAL REMARKS

MARINE MAMMAL STRANDING REPORT – LEVEL A DATA

FIELD #: 03-IS-160 NMFS REGIONAL #: 03NWR05033 (NMFS USE) NATIONAL DATABASE #: NW-2003-028452 (NMFS USE)

COMMON NAME: Harbor Porpoise GENUS: Phocoena SPECIES: phocoena

EXAMINER

Name: W's V Beach Watchers Affiliation:

Address: Phone:

LOCATION

State: WA County: Island

City:

Locality Details: West Beach Whidbey Isl.

Latitude: N

Longitude: W

OCCURRENCE DETAILS

MS#: (NMFS USE)

Mass Stranding: ☐ YES ☒ NO # Animals: 1

Signs of Human Interaction: ☐ YES ☐ NO ☒ Could Not be Determined (CBD)

(Check one or more) ☐ 1. Boat Collision ☐ 3. Fishery Interaction ☐ 2. Shot ☐ 4. Other Human Interaction:

How determined: ☐ External Exam ☐ Internal Exam ☒ Not Examined

Other Causes: ☐ YES ☐ NO ☒ CBD Describe:

DATE OF INITIAL OBSERVATION

Year: 03 Month: 05 Day: 12

STATUS (Check ONE)

☐ 1. Alive ☐ 4. Advanced Decomposition

☐ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate Decomposition ☒ 6. Dead – Condition Unknown

DATE OF EXAMINATION (LEVEL A)

☒ Not Able to Examine

Year: Month: Day:

CONDITION (Check ONE)

☐ 1. Alive ☐ 4. Advanced Decomposition

☐ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

INITIAL LIVE ANIMAL DISPOSITION (Check one or more)

☐ 1. Left at Site ☐ 5. Euthanized at Site

☐ 2. Immediate Release at Site ☐ 6. Died at Site

☐ 3. Relocated ☐ 7. Transferred to Rehabilitation

☐ 4. Disentangled ☐ 8. Died During Transport

☐ 9. Other

CONDITION (Check ONE)

☐ 1. Sick ☐ 3. Apparently Healthy ☐ 5. Other

☐ 2. Injured ☐ 4. Out of Habitat

Date: Rehabilitation Facility:

Comments:

MORPHOLOGICAL DATA

SEX (Check ONE)

☐ 1. Male

☐ 2. Female

☒ 3. Unknown

AGE CLASS (Check ONE)

☐ 1. Adult ☐ 4. Pup/Calf

☐ 2. Subadult ☒ 5. Unknown

☐ 3. Yearling

Straight Length: ☐ cm ☐ in ☐ actual ☐ estimate

Weight ☐ kg ☐ lb ☐ actual ☐ estimate

PHOTOS/VIDEOS TAKEN: ☐ YES ☒ NO

Disposition:

TAG DATA

ID#	Color	Type	*Placement (Circle One)	Applied	Present
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐

*D=Dorsal; DF=Dorsal Fin; L=Lateral Body
LF=Left Front; LR=Left Rear; RF=Right Front; RR=Right Rear

WHOLE CARCASS DISPOSAL (Check one or more)

☒ 1. Left at Site ☐ 4. Rendered ☒ 7. Unknown

☐ 2. Buried ☐ 5. Sunk

☐ 3. Towed ☐ 6. Frozen for Later Examination

SPECIMEN DISPOSITION (Check one or more)

☐ 1. Scientific Collection

☐ 2. Educational Collection

☐ 3. Other:

Comments: not collected

NECROPSIED ☐ YES ☒ NO Date:

NECROPSIED BY:

6/2/04

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OMB No. 0648-0178, Expires May 31, 2004

PLEASE USE BACK SIDE OF THIS FORM FOR ADDITIONAL REMARKS

MARINE MAMMAL STRANDING REPORT – LEVEL A DATA

FIELD #: WIC 051303SD NMFS REGIONAL #: 03NWR05010 (NMFS USE) NATIONAL DATABASE #: NW-2003-1000783 (NMFS USE)

COMMON NAME: HARBOR PORPOISE GENUS: PHOCOENA SPECIES: PHOCOENA

EXAMINER

Name: SANDY DUBERNELL Letterholder: MATT KLOPE NAVY BIOLOGIST

Affiliation: WSU ISLAND COUNTY MMSN

Address: 1224 NIMITZ DR COUPEVILLE WA 98239 Phone: 360-678-3765

LOCATION

State: WA County: ISLAND

City: COUPEVILLE

Locality Details: FORT CASEY STATE PARK 1 1/2 WAY BETW STAIRCASES AT POINT + GUN EMPLACEMENT

Latitude: Admiralty Head N

Longitude: W

OCCURRENCE DETAILS

MS#: (NMFS USE)

Mass Stranding: ☐ YES ☒ NO # Animals:

Signs of Human Interaction: ☐ YES ☐ NO ☒ Could Not be Determined (CBD)

(Check one or more) ☐ 1. Boat Collision ☐ 3. Fishery Interaction ☐ 2. Shot ☒ 4. Other Human Interaction: POSSIBLE

How determined: ☒ External Exam ☐ Internal Exam ☐ Not Examined

Other Causes: ☐ YES ☐ NO ☐ CBD Describe:

DATE OF INITIAL OBSERVATION

Year: 2003 Month: 5 Day: 13

DATE OF EXAMINATION (LEVEL A) ☐ Not Able to Examine

Year: 2003 Month: 5 Day: 13

STATUS (Check ONE)

☐ 1. Alive ☐ 4. Advanced Decomposition

☒ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

CONDITION (Check ONE)

☐ 1. Alive ☐ 4. Advanced Decomposition

☒ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

INITIAL LIVE ANIMAL DISPOSITION (Check one or more)

☐ 1. Left at Site ☐ 5. Euthanized at Site

☐ 2. Immediate Release at Site ☐ 6. Died at Site

☐ 3. Relocated ☐ 7. Transferred to Rehabilitation

☐ 4. Disentangled ☐ 8. Died During Transport

☐ 9. Other

CONDITION (Check ONE)

☐ 1. Sick ☐ 3. Apparently Healthy ☐ 5. Other

☐ 2. Injured ☐ 4. Out of Habitat

Date: Rehabilitation Facility:

Comments:

MORPHOLOGICAL DATA

SEX (Check ONE)

☒ 1. Male

☐ 2. Female

☐ 3. Unknown

AGE CLASS (Check ONE)

☒ 1. Adult ☐ 4. Pup/Calf

☐ 2. Subadult ☐ 5. Unknown

☐ 3. Yearling

154cm

Straight Length: 63" ☐ cm ☒ in ☒ actual ☐ estimate

Weight 120 55 ☒ kg ☒ lb ☒ actual ☒ estimate

PHOTOS/VIDEOS TAKEN: ☒ YES ☐ NO

Disposition: DIGITAL PHOTOS AVAILABLE ADMIRALTY HEAD LIGHTHOUSE. ALSO FROM RESPONDER

6/23/03

TAG DATA

ID#	Color	Type	*Placement (Circle One)	Applied	Present
	G		D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐

*D=Dorsal; DF=Dorsal Fin; L=Lateral Body
LF=Left Front; LR=Left Rear; RF=Right Front; RR=Right Rear

WHOLE CARCASS DISPOSAL (Check one or more)

☐ 1. Left at Site ☐ 4. Rendered ☐ 7. Unknown

☐ 2. Buried ☐ 5. Sunk

☐ 3. Towed ☐ 6. Frozen for Later Examination

SPECIMEN DISPOSITION (Check one or more)

☒ 1. Scientific Collection

☐ 2. Educational Collection

☐ 3. Other:

Comments:

NECROPSIED ☒ YES ☐ NO Date: 7/24/03

NECROPSIED BY:

EDIZ HOOK - HP w/ Head

Yes to Scan 7/20

MARINE MAMMAL STRANDING REPORT – LEVEL A DATA

NW-2003-1000784

FIELD #: OCNMS03Pp02 NMFS REGIONAL #: 03NWR05011 (NMFS USE) NATIONAL DATABASE #: (NMFS USE)

COMMON NAME: HARBOR PORPOISE GENUS: PHOCOENA SPECIES: PHOCOENA

EXAMINER Letterholder:

Name: LIAM ANDRUM Affiliation: OLYMPIC COAST NAT. MARINE SANCTUARY

Address: 115 E. RAILROAD AVE SUITE 301 Phone: 360 457-6622
PORT ANGELES WA

LOCATION

State: WA County: CLALLAM

City: PORT ANGELES

Locality Details: EDIZ HOOK
NORTH SIDE
NEAR COAST GUARD GATE

Latitude: N

Longitude: W

OCCURRENCE DETAILS

MS#: (NMFS USE)

Mass Stranding: ☐ YES ☒ NO # Animals: 1

Signs of Human Interaction: ☐ YES ☒ NO ☐ Could Not be Determined (CBD)

(Check one or more) ☐ 1. Boat Collision ☐ 3. Fishery Interaction ☐ 2. Shot ☐ 4. Other Human Interaction:

How determined: ☒ External Exam ☐ Internal Exam ☐ Not Examined

Other Causes: ☐ YES ☐ NO ☐ CBD Describe:

DATE OF INITIAL OBSERVATION

Year: 03 Month: 05 Day: 16

DATE OF EXAMINATION (LEVEL A) ☐ Not Able to Examine

Year: Month: Day:

STATUS (Check ONE)

☐ 1. Alive ☐ 4. Advanced Decomposition
☒ 2. Fresh Dead ☐ 5. Mummified/Skeletal
☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

CONDITION (Check ONE)

☐ 1. Alive ☐ 4. Advanced Decomposition
☐ 2. Fresh Dead ☐ 5. Mummified/Skeletal
☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

INITIAL LIVE ANIMAL DISPOSITION (Check one or more)

☐ 1. Left at Site ☐ 5. Euthanized at Site
☐ 2. Immediate Release at Site ☐ 6. Died at Site
☐ 3. Relocated ☐ 7. Transferred to Rehabilitation
☐ 4. Disentangled ☐ 8. Died During Transport
☐ 9. Other

CONDITION (Check ONE)

☐ 1. Sick ☐ 3. Apparently Healthy ☐ 5. Other
☐ 2. Injured ☐ 4. Out of Habitat

Date: Rehabilitation Facility:

Comments:

MORPHOLOGICAL DATA

SEX (Check ONE)
☐ 1. Male
☒ 2. Female
☐ 3. Unknown

AGE CLASS (Check ONE)
☒ 1. Adult ☐ 4. Pup/Calf
☐ 2. Subadult ☐ 5. Unknown
☐ 3. Yearling

136.5

Straight Length: 141 ☒ cm ☐ in ☒ actual ☐ estimate

Weight 37 ☒ kg ☐ lb ☒ actual ☐ estimate

PHOTOS/VIDEOS TAKEN: ☒ YES ☐ NO

Disposition:

TAG DATA

ID#	Color	Type	*Placement (Circle One)	Applied	Present
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐

*D=Dorsal; DF=Dorsal Fin; L=Lateral Body
LF=Left Front; LR=Left Rear; RF=Right Front; RR=Right Rear

WHOLE CARCASS DISPOSAL (Check one or more)

☐ 1. Left at Site ☐ 4. Rendered ☐ 7. Unknown
☐ 2. Buried ☐ 5. Sunk
☐ 3. Towed ☒ 6. Frozen for Later Examination

SPECIMEN DISPOSITION (Check one or more)

☒ 1. Scientific Collection
☐ 2. Educational Collection
☐ 3. Other:

Comments:

NECROPSIED ☒ YES ☐ NO Date: 7/23/03

NECROPSIED BY:

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ADDITIONAL REMARKS

ADDITIONAL IDENTIFIER: _____

LENGTH (CENTER OF FLUKE TO TIP OF SNOUT ALONG SIDE)
141 CM

- BLOOD OOZING FROM EYES, BLOWHOLE + MOUTH
- VENTRAL SIDE W/ MULTIPLE SCRAPS - PROBABLY GULL DAMAGE
- STRANDED HIGH ON INTERTIDAL

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MARINE MAMMAL STRANDING REPORT – LEVEL A DATA

FIELD #: WIEOS7035B NMFS REGIONAL #: 03NWR05019 (NMFS USE) NATIONAL DATABASE #: NW-2003-1000819 (NMFS USE)

COMMON NAME: Harbor Porpoise GENUS: Phocoena SPECIES: phocoena

EXAMINER

Name: Susan Berta (Lynn Schmidt) Affiliation: Orca Network / Beach Watchers

Address: 2403 S. North Bluff, Greenbank WA 98253 Phone: 360-678-3451

Letterholder: Matt Klope

LOCATION

State: WA County: Island

City: Greenbank

Locality Details: Lagoon Pt, on beach in front of 195 Westcliff Dr

Latitude: _____ N

Longitude: _____ W

OCCURRENCE DETAILS

MS#: _____ (NMFS USE)

Mass Stranding: ☐ YES ☒ NO # Animals: _____

Signs of Human Interaction: ☐ YES ☒ NO ☐ Could Not be Determined (CBD)

(Check one or more) ☐ 1. Boat Collision ☐ 3. Fishery Interaction ☐ 2. Shot ☐ 4. Other Human Interaction: _____

How determined: ☒ External Exam ☐ Internal Exam ☐ Not Examined

Other Causes: ☐ YES ☐ NO ☐ CBD Describe: _____

DATE OF INITIAL OBSERVATION

Year: 03 Month: 05 Day: 17

DATE OF EXAMINATION (LEVEL A) ☐ Not Able to Examine

Year: 03 Month: 05 Day: 17

STATUS (Check ONE)

☐ 1. Alive ☐ 4. Advanced Decomposition

☒ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

CONDITION (Check ONE)

☐ 1. Alive ☐ 4. Advanced Decomposition

☒ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

INITIAL LIVE ANIMAL DISPOSITION (Check one or more)

☐ 1. Left at Site ☐ 5. Euthanized at Site

☐ 2. Immediate Release at Site ☐ 6. Died at Site

☐ 3. Relocated ☐ 7. Transferred to Rehabilitation

☐ 4. Disentangled ☐ 8. Died During Transport

☐ 9. Other

CONDITION (Check ONE)

☐ 1. Sick ☐ 3. Apparently Healthy ☐ 5. Other

☐ 2. Injured ☐ 4. Out of Habitat

Date: _____ Rehabilitation Facility: _____

Comments: _____

MORPHOLOGICAL DATA

SEX (Check ONE)

☐ 1. Male

☒ 2. Female

☐ 3. Unknown

AGE CLASS (Check ONE)

☒ 1. Adult ☐ 4. Pup/Calf

☐ 2. Subadult ☐ 5. Unknown

☐ 3. Yearling

138 cm

Straight Length: 54 ☐ cm ☒ in ☒ actual ☐ estimate

Weight 37.5 ☒ kg ☐ lb ☒ actual ☐ estimate

PHOTOS/VIDEOS TAKEN: ☒ YES ☐ NO digital photos & video

Disposition: Brad Hanson picked up specimen the evening of 5/17/03, brought to NMML for further examination

TAG DATA

ID#	Color	Type	*Placement (Circle One)	Applied	Present
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐

*D=Dorsal; DF=Dorsal Fin; L=Lateral Body
LF=Left Front; LR=Left Rear; RF=Right Front; RR=Right Rear

WHOLE CARCASS DISPOSAL (Check one or more)

☐ 1. Left at Site ☐ 4. Rendered ☐ 7. Unknown

☐ 2. Buried ☐ 5. Sunk

☐ 3. Towed ☒ 6. Frozen for Later Examination

SPECIMEN DISPOSITION (Check one or more)

☒ 1. Scientific Collection

☐ 2. Educational Collection

☐ 3. Other: _____

Comments: Brought to NMML by Brad Hanson to be necropsied with other recent porpoise specimens

NECROPSIED ☒ YES ☐ NO Date: 7/24/03

NECROPSIED BY: _____

6/30/03

ADDITIONAL REMARKS

ADDITIONAL IDENTIFIER: _____

The call came in at 8 30 am, Lynn Schmid & I responded at approx. 10 am. No visible cause of death, freshly dead specimen. Brad Hanson was called to collect specimen, due to high number of porpoise strandings & coincident Naval sonar exercises. After measuring & examination, we wrapped the specimen in a tarp to protect from predation by eagles, & moved it above the high tide line. Brad picked it up that evening.

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Public reporting burden for the collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing the burden to: Chief, Marine Mammal Conservation Division, Office of Protected Resources, NOAA Fisheries, 1315 East-West Highway, Silver Spring, Maryland 20910. Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subjected to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless the collection of information displays a currently valid Office of Management and Budget (OMB) Control Number.

MARINE MAMMAL STRANDING REPORT

NW-2003-000785 SID# _____ (NMFS USE) 7/23

FIELD NO.: 2003-SJ009 NMFS REGISTRATION NO.: 03NWR05012

COMMON NAME: Harbor Porpoise GENUS: Phocoena SPECIES: phocoena To scan 4 pgs

EXAMINER Name: R. Osborne / K. Balcomb Agency: The Whale Museum Phone: 360 378-4710

Address: P.O. Box 945 Friday Harbor WA 98250

LOCATION

State: WA County: San Juan

City: _____

Locality Details: Eagle Pt., West side San Juan Island floating

*Latitude: _____ N

*Longitude: _____ W

TYPE OF OCCURRENCE

Mass Stranding: ☐ Yes ☒ No # Animals 1

Human Interaction: ☐ Yes ☐ No ☒ ?

Check one:
- ☐ 1. Boat Collision
- ☐ 2. Shot
- ☐ 3. Fishery Interaction
- ☐ 4. Other _____

How determined: _____

Other Causes (if known): _____

DATE OF INITIAL OBSERVATION:

Yr. 2003 Mo. 5 Day 20

CONDITION: Check one:
- ☐ 1. Alive
- ☒ 2. Fresh dead
- ☐ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

DATE OF EXAMINATION:

Yr. 2003 Mo. 5 Day 20

CONDITION: Check one:
- ☐ 1. Alive
- ☒ 2. Fresh dead
- ☐ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

LIVE ANIMAL — Condition and Disposition:

Check one or more:
- ☐ 1. Released at site
- ☐ 2. Sick
- ☐ 3. Injured
- ☐ 4. Died
- ☐ 5. Euthanized
- ☐ 6. Rehabilitated and released
- ☐ ?. Unknown

Transported to: _____

☐ Died ☐ Released Date: _____

TAGS APPLIED?: ☐ Yes ☒ No

TAGS PRESENT?: ☐ Yes ☒ No

	Dorsal	Left	Right
Tag No.(s):			
Color(s):			
Type:			
Placement		Front/Rear	Front/Rear

CARCASS — Disposition:

Check one:
- ☐ 1. Left at site
- ☐ 2. Buried
- ☐ 3. Towed
- ☒ 4. Sci. collection: (see below)
- ☐ 5. Edu. collection: (see below)
- ☐ 6. Other _____
- ☐ ?. Unknown

NECROPSIED? 7/23/03 ☒ Yes ☐ No

6/23/03

MORPHOLOGICAL DATA:

Sex — Check one:
- ☒ 1. Male immature
- ☐ 2. Female
- ☐ ?. Unknown

Contour: Straight Length: 123 cm [redacted] ☐ in ☐ est

*Weight 30 kg [redacted] ☐ lb ☐ est

PHOTOS TAKEN? ☒ Yes ☐ No

Girth ___ in ___ est

REMARKS: Towed by Whale-watch operator to Snug Harbor. Ken Balcomb picked up animal and stored it in Center for Whale Research (CWR) freezer

DISPOSITION OF TISSUE/SKELETAL MATERIAL: _____

NOAA Form 89-864
OMB#0648-0178, expires 01/31/97

*Record data if available

It is estimated that completion of this form requires 20 minutes.

NW-2003-1002228
~~SID#~~ (NMFS USE)

MARINE MAMMAL STRANDING REPORT

FIELD NO.: 2003-SJ020 NMFS REGISTRATION NO.: 03NWR05046

COMMON NAME: Harbor porpoise GENUS: Phocoena SPECIES: phocoena

EXAMINER Name: J. Knight Agency: The Whale Museum Phone: (360) 378-4710

Address: PO Box 945 Friday Harbor WA 98250

LOCATION

State: WA County: San Juan

City:

Locality Details: Flint Beach, Lopez Island

*Latitude: N

*Longitude: W

TYPE OF OCCURRENCE

Mass Stranding: ☐ Yes ☒ No # Animals 1

Human Interaction: ☐ Yes ☐ No ☐ ?

Check one:
- ☐ 1. Boat Collision
- ☐ 2. Shot
- ☐ 3. Fishery Interaction
- ☐ 4. Other

How determined:

Other Causes (if known):

DATE OF INITIAL OBSERVATION:

Yr. 2003 Mo. 5 Day 25

CONDITION: Check one:
- ☐ 1. Alive
- ☐ 2. Fresh dead
- ☐ 3. Moderate decomp.
- ☒ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

DATE OF EXAMINATION:

Yr. Mo. Day

CONDITION: Check one:
- ☐ 1. Alive
- ☐ 2. Fresh dead
- ☐ 3. Moderate decomp.
- ☐ 4. Advanced decomp.
- ☐ 5. Mummified
- ☐ ?. Unknown

LIVE ANIMAL — Condition and Disposition:

Check one or more:
- ☐ 1. Released at site
- ☐ 2. Sick
- ☐ 3. Injured
- ☐ 4. Died
- ☐ 5. Euthanized
- ☐ 6. Rehabilitated and released
- ☐ ?. Unknown

Transported to:

☐ Died ☐ Released Date:

TAGS APPLIED?: ☐ Yes ☐ No

TAGS PRESENT?: ☐ Yes ☐ No

	Dorsal	Left	Right
Tag No.(s):			
Color(s):			
Type:			
Placement		Front/Rear	Front/Rear

CARCASS — Disposition:

Check one:
- ☒ 1. Left at site
- ☐ 2. Buried
- ☐ 3. Towed
- ☐ 4. Sci. collection: (see below)
- ☐ 5. Edu. collection: (see below)
- ☐ 6. Other
- ☐ ?. Unknown

NECROPSIED? ☐ Yes ☐ No

MORPHOLOGICAL DATA:

Sex — Check one:
- ☐ 1. Male
- ☐ 2. Female
- ☐ ?. Unknown

Straight Length: ☐ cm ☐ in ☐ est

*Weight ☐ kg ☐ lb ☐ est

PHOTOS TAKEN? ☐ Yes ☐ No

3/17/04

REMARKS: Dead on beach. Scavenged by Eagles

DISPOSITION OF TISSUE/SKELETAL MATERIAL:

*Record data if available

Received 7/22

1 ST CT done

MARINE MAMMAL STRANDING REPORT – LEVEL A DATA

FIELD #: CRC 490 NMFS REGIONAL #: 03NWR06005 (NMFS USE) NATIONAL DATABASE #: NW-2003-100106 (NMFS USE)

COMMON NAME: Harbor Porpoise GENUS: P. SPECIES: phocoena

EXAMINER Letterholder:

Name: Cascadia Research Affiliation:

Address: Phone:

LOCATION

State: WA County: Pacific

City: Long Beach

Locality Details:

Latitude: N

Longitude: W

OCCURRENCE DETAILS

MS#: (NMFS USE)

Mass Stranding: ☐ YES ☐ NO # Animals: 1

Signs of Human Interaction: ☐ YES ☒ NO ☒ Could Not be Determined (CBD)

(Check one or more) ☐ 1. Boat Collision ☐ 3. Fishery Interaction ☐ 2. Shot ☐ 4. Other Human Interaction:

How determined: ☒ External Exam ☐ Internal Exam ☐ Not Examined

Other Causes: ☐ YES ☐ NO ☒ CBD Describe:

DATE OF INITIAL OBSERVATION

Year: 03 Month: 06 Day: 02

STATUS *(Check ONE)*

☐ 1. Alive ☐ 4. Advanced Decomposition

☒ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

DATE OF EXAMINATION (LEVEL A) ☐ Not Able to Examine

Year: 03 Month: 06 Day: 02

CONDITION *(Check ONE)*

☐ 1. Alive ☐ 4. Advanced Decomposition

☒ 2. Fresh Dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate Decomposition ☐ 6. Dead – Condition Unknown

INITIAL LIVE ANIMAL DISPOSITION *(Check one or more)*

☐ 1. Left at Site ☐ 5. Euthanized at Site

☐ 2. Immediate Release at Site ☐ 6. Died at Site

☐ 3. Relocated ☐ 7. Transferred to Rehabilitation

☐ 4. Disentangled ☐ 8. Died During Transport

☐ 9. Other

CONDITION *(Check ONE)*

☐ 1. Sick ☐ 3. Apparently Healthy ☐ 5. Other

☐ 2. Injured ☐ 4. Out of Habitat

Date: Rehabilitation Facility:

Comments:

MORPHOLOGICAL DATA

SEX *(Check ONE)*

☒ 1. Male

☐ 2. Female

☐ 3. Unknown

AGE CLASS *(Check ONE)*

☒ 1. Adult ☐ 4. Pup/Calf

☒ 2. Subadult ☐ 5. Unknown

☐ 3. Yearling

Straight Length: 146 ☒ cm ☐ in ☒ actual ☐ estimate

Weight 39 ☒ kg ☐ lb ☒ actual ☐ estimate

PHOTOS/VIDEOS TAKEN: ☒ YES ☐ NO

Disposition: NWR office

TAG DATA

ID#	Color	Type	*Placement *(Circle One)*	Applied	Present
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐
			D DF L LF LR RF RR	☐	☐

*D=Dorsal; DF=Dorsal Fin; L=Lateral Body
LF=Left Front; LR=Left Rear; RF=Right Front; RR=Right Rear

WHOLE CARCASS DISPOSAL *(Check one or more)*

☐ 1. Left at Site ☐ 4. Rendered ☐ 7. Unknown

☐ 2. Buried ☐ 5. Sunk

☐ 3. Towed ☒ 6. Frozen for Later Examination

SPECIMEN DISPOSITION *(Check one or more)*

☒ 1. Scientific Collection

☐ 2. Educational Collection

☐ 3. Other:

Comments:

NECROPSIED ☒ YES ☐ NO Date: 7/22/03

NECROPSIED BY:

Appendix C. – Investigation team members with affiliations and expertise.

Investigation Team Leaders -

Darlene Ketten
Biology Department
Woods Hole Oceanographic Institution
Woods Hole MA 02543 USA

Dr. Ketten is a marine biologist and neuroanatomist specializing in how behavior is linked to sensory system structure and function. She holds joint appointments as a senior scientist in the biology department of Woods Hole Oceanographic Institution and as assistant professor in Otolaryngology at Harvard Medical School. Her current work focuses on underwater sound reception and hearing mechanisms of marine mammals and research on the diagnostic and mechanistic analysis or pathology, trauma and disease of the ears and ear region. In addition to basic research, Dr. Ketten provides specialty forensic analyses of the head and neck for NMFS investigations in stranded animals. Dr. Ketten has served on federal advisory boards and panels on hearing, bioacoustics, acoustic trauma, cochlear implant policy and procedures, marine mammal acoustics and ocean noise for the National Institute of Health, National Institutes of Deafness and Communication Disorders, NIH Consensus Development Conferences, the National Academy of Sciences, the Marine Mammal Commission, Minerals Management Service, NATO, Office of Naval Research and NMFS.

William A. McLellan
University of North Carolina, Wilmington
601 S. College Dr.
Wilmington, NC 28403

Bill is a Research Scientist at the University of North Carolina at Wilmington. Mr. McLellan is the North Carolina State Stranding Coordinator and the Large Whale Mortality Team Leader for the mid-Atlantic and recently received the NOAA Environmental Hero Award in recognition of outstanding efforts to respond and investigate stranded marine mammals throughout the nation.

Ann Pabst
University of North Carolina, Wilmington
601 S. College Dr.
Wilmington, NC 28403

Dr. Pabst is a Professor in Biological Sciences at the University of North Carolina at Wilmington. Her work on the bio-mechanics of small cetacean skin and blubber combines the principles of mechanical engineering with the study of organismal form and function using quantitative morphological techniques, image analysis, and mechanical tests.

Both McLellan and Pabst have over 20 years of experience working with dead stranded and live cetaceans. Harbor porpoises have been a focal species for this team - they have necropsied over 250 porpoises during their research. Their current focus, on the functional morphology of cetaceans is specific to locomotion and thermoregulation but extends also to the functional development of muscle, skeleton and skin.

Additional team members-

Stephen Raverty
Ministry of Agriculture Food and Fisheries
1767 Angus Campbell Rd.
Abbotsford, British Columbia
V3G 2M3
Canada

Dr. Raverty is a board-certified, veterinary pathologist with the Ministry of Agriculture, Food and Fisheries in Abbotsford, British Columbia and over the previous 5 years has participated in the post mortem examination and disease outbreak investigations of stranded marine mammals off the coast of British Columbia and more recently within Washington state.

Michelle Fleetwood
Armed Forces Institute of Pathology
6825 16th St. NW
Washington, DC 20306

Dr. Fleetwood, DVM, Chief, Consultation Branch, Department of Veterinary Pathology, Armed Forces Institute of Pathology. She is a Diplomate of the American College of Veterinary Pathologists.

Joseph K. Gaydos
SeaDoc Society
UC Davis Wildlife Health Center
982 Deer Harbor Rd.
Eastsound, WA 98245

Dr. Gaydos is a wildlife veterinarian and the staff scientist for the SeaDoc Society (UC Davis Wildlife Health Center). He is a veterinarian and has a PhD in wildlife diseases. He resides on Orcas Island, Washington State and has worked with Rich Osborne of the Whale Museum for the past year on a project determining the causes of death for stranded marine mammals in San Juan County, Washington.