

Book Review

STELLER SEA LION DECLINE: IS IT FOOD II? Douglas DeMaster and Shannon Atkinson (eds). University of Alaska Sea Grant, AK-SG-02-02, Fairbanks. 2002. ISBN number 1-56612-072-1, 78 pp.

Populations of Steller (Northern) sea lions in the western Gulf of Alaska and throughout the Aleutian Islands have declined rather catastrophically during the past three decades. Reduced prey availability owing to intense commercial fishing, especially for groundfish, was an attractive explanation for the decline though there has been no direct evidence to distinguish correlation from cause and effect and other indirect evidence has been equivocal.

In any event, the rapid and substantial declines prompted the US Government (NOAA Fisheries as the delegated agency for managing marine mammals) to add the Steller sea lion to its list of 'Endangered Species' under the US Marine Mammal Protection Act (MMPA; 16 USC. §1361 *et seq.*) and the US Endangered Species Act (ESA; 16 USC. §1531 *et seq.*). The initial listing of the species as 'threatened' in 1990 resulted in automatic designation of it as 'depleted' under the MMPA and the consequent prohibition of any taking (i.e., direct or incidental killing, etc.) of animals from the depleted stocks. As Steller sea lions were being killed incidental to commercial fishing operations (e.g., entanglement in active fishing gear and marine debris, indiscriminate shooting), this status change threatened to close some commercial fishing in the Gulf of Alaska and Bering Sea. In 1994, the MMPA was amended to allow the taking of marine mammals, including Steller sea lions despite the continued decline in population, from depleted stocks, populations or species incidental to fishing operations.

In 1997, because of continued decline in portions of the Steller sea lion's range, the western population (i.e., west of Cape Suckling, Alaska = 144°W longitude) was reclassified to a heightened 'endangered' status.¹ Continued incidental taking

of sea lions by commercial fishing operations were still allowed, though some regulations were promulgated to restrict those fishing activities from operating in certain areas. Despite these regulatory actions, the western stock continued to decline. Commercial fishing interests continued to be pressured to stop fishing in some areas and many responded by lobbying the US Congress to craft regulations that would allow their operations to continue citing the lack of a smoking gun linking extraction of fish from Gulf of Alaska, Bering Sea and Aleutian Islands marine ecosystems with declines in the Steller sea lion population there. Subsequently, a relatively large amount of funding was appropriated by the US Congress, largely owing to Senator Ted Stevens' actions, to support research on Steller sea lions and their foraging ecology as it might intersect with commercial fishing operations.

This brief booklet edited by D. DeMaster and S. Atkinson is a summary of some of the research that has been conducted recently, largely with support from those appropriations, to evaluate the hypothesis that extraction of fish from marine ecosystems has been and continues to be a significant contributing factor in the decline of the western stock of Steller sea lions. It contains extended abstracts of thirteen of fourteen presentations given at a workshop held at the Alaska SeaLife Center in Seward, Alaska on 30 and 31 May 2001 and a 'Summary Statement from Workshop Participants'. The first abstract chapter by T. Loughlin and A. York briefly summarizes the pattern of decline and its potential proximate and ultimate causes. Other authors note the structure of previous or active research projects on foraging and nursing cycles of lactating female sea lions (R. D. Andrews *et al.*; R. W. Davis *et al.*), foraging locations of adult females (M. Rehberg *et al.*), nutrition of captive sea lions (M. A. Castellini; D. A. S. Rosen and A. W. Trites), diet of free ranging sea lions (K. Wynne and R. Foy; E. Sinclair and T. Zepplin) and theoretical discussions on alternate explanations for population declines (e.g., environmental changes, predation) are briefly outlined by others (K. W. Pitcher; P. J. Anderson and J. E. Blackburn; C. O. Matkin *et al.*; L. Hulbert *et al.*). The key explanatory variable for the decline, and one that has been highlighted in previous theoretical studies, is that poor survival of juveniles and poor recruitment

¹At that time, taking of habitat, including essential prey resources, was not considered to be a taking of the threatened or endangered animals under the MMPA, though by a decision of the United States Supreme Court (115 S.Ct. 2407; 1995), it was considered to be a taking under the ESA. NOAA fisheries has since issued regulations that harmonizes taking of habitat under the MMPA with that under the ESA according to the Supreme Court decision.

to the adult breeding population. The correlative argument is that 'nutritional stress' is the cause of this poor survival of juveniles, after they have become independent from their mothers. Oddly, none of the presentations address this issue squarely with substantive data, though the abstract by K. Pitcher indicates that some recent work has begun that might evaluate the body condition of juveniles and L. Rea outlines some research on blubber composition as an indirect metric. Moreover, there is little new information presented in this collection of abstracts that might allow the issue of food limitation effects on the demography of Steller sea lions generally, and juvenile survival specifically, to be assessed. The booklet is primarily a procedural documentation of the workshop event,

rather than a substantive analysis of the competing hypotheses and explanations and would not be of much value to those looking for analytically supported conclusions. Nonetheless, the promise of results, analyses, and interpretations from these works in progress is encouraging. Anyone interested in Steller sea lions and the politically dominated issue of their management should look forward to the appearance as independent publications in a variety of journals of the substantive results and detailed development of various arguments of studies outlined in this workshop summary.

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