

Essential features of Critical Habitat Designation: Then and Now

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Under ESA, “critical habitat” is defined as the specific areas within the geographical area occupied by the species (at the time it is listed) on which are found those physical or biological features **essential** to the conservation of the species and may require special management considerations.¹ These are the “essential features” of critical habitat.

The regulations on designation of critical habitat state that the focus shall be “*on the principal biological and physical constituent elements within the defined area that are essential to the conservation of the species. Known primary constituent elements shall be listed with the critical habitat description.*”² The primary constituent elements are known as PCEs and are also characterized as “essential”.

To highlight the importance of specifically identifying essential features, there has been a recent court case regarding critical habitat designation for polar bears. In its order, the court ruled that USFWS cannot designate large swaths of land as critical habitat based on the probability or speculation of the presence of essential features:

*“Specifically, in order for an area to be designated as critical habitat, an agency must determine that the area actually contains physical or biological features essential for the conservation of the species. An agency cannot simply speculate as to the existence of such features”*³

And: “....there is no evidence that Congress intended to allow the . . . Service to regulate any parcel of land that is merely capable of supporting a protected species.”⁴

And: “.... the statute is clear: The specific areas designated as critical habitat must contain physical or biological features essential to the conservation of the species at the time of listing.”⁵

The ESA also states that critical habitat shall not include the entire geographical area of a species (except in those circumstances determined by the Secretary).⁶

Currently, the size of the area of critical habitat for Steller sea lions is 118,619⁷ square nautical miles (or 157,085 square statute miles). If SSL critical habitat was a state it would be the third largest in the union (after Alaska and Texas but larger than California). Approximately 87% of the current critical habitat is west of 144 degrees. There is no legal definition of “swath”, however, the current area of SSL critical habitat is quite large. In part, this is due to the available information and stock status in 1993.

¹ ESA, Section 3(5)(A)

² 50 CFR 424.12 (b)

³ Alaska Oil and Gas v. Salazar, January 10, 2013, pp. 37-38.

⁴ Ibid. p. 15

⁵ Ibid. p. 42

⁶ ESA, Section 3(5)(C)

⁷ Personal communication with NMFS

Putting legal interpretations aside, it is clear that the specific identification of essential features and PCEs are a fundamental step in designating critical habitat. The challenge is to discern what is “essential” for Steller sea lions versus the larger range that they occupy and travel through.

So what were the identified essential features in the original designation of critical habitat for Steller sea lions in 1993?

1993 Final Rule

In 1993, when critical habitat for SSLs was originally designated, the essential physical and biological habitat features were identified as⁸:

- 1.) Terrestrial habitat: rookeries and haulouts
- 2.) Aquatic habitat: nearshore waters around rookeries and haulouts
- 3.) Rafting sites
- 4.) Food resources
- 5.) Foraging habitats: near rookeries and haulouts

The 1993 final rule identified essential features and areas requiring special management considerations (excluding the rafting sites) as well as designating critical habitat:

- 1.) Terrestrial habitat at rookeries and haulouts including a 3000 foot zone extending landward (roughly one kilometer) and a 3000 foot air space extending upward.
- 2.) Aquatic habitat zone around rookeries and haulouts extending:
 - a. 3000 feet seaward for rookeries and haulouts east of 144 degrees
 - b. 20 miles seaward for rookeries and haulouts west of 144 degrees where SSLs “have experienced the greatest decline.”
- 3.) Special foraging areas in Seguam Pass; Bogosolof Island; and Shelikof Strait.

The 1993 final rule designating critical habitat greatly expanded the Recovery Team recommendations for the aquatic zone around rookeries and haulouts. The Recovery Team recommended aquatic zones extending 3000’ seaward (one kilometer) for all rookeries and major haulouts be considered “essential habitat that merits special management consideration.”

However, in the critical habitat designation, the final rule increased the aquatic zone recommendation from the Recovery Team (around rookeries and haulouts) from 3000 feet to 20 miles. This is a 1256 X increase in area (from 1.0 square mile to 1256 square miles per rookery and haulout). The final rule also increased the size of the Bogosolof Island foraging area beyond the size that was recommended by the Recovery Team.

It should be noted that prior to designation of critical habitat in 1993, NMFS had previously established regulatory 3 mile no-transit zones around rookeries west of 150 degrees as well 10

⁸ Final Rule, Federal Register Vol. 58, No. 165, August 27, 1993, FR 45269-45285,

mile no-trawl zones in the GOA and BSAI around rookeries (and seasonal 20 mile no trawl zones around six BSAI rookeries in the winter only - during pollock roe season). These regulations were put in place due to concerns that commercial fisheries in these areas could deplete prey abundance. It is not clear how the Recovery Team considered these management measures in their recommendations for essential features or whether the Recovery Team did not deem the additional closures as necessary to protect the essential features of the habitat.

The 1993 final rule acknowledged that “*no definitive description of Steller sea lion foraging habitat is possible.*”⁹ However, the rationale in the final rule for the increase of the essential aquatic zone from the 3000’ recommendation to the 20 mile rings west of 144 was based upon:

- 1.) Rookeries and haulouts in the historical center of SSL abundance (Kenai to Kiska) have experienced the greatest decline.
- 2.) The areas of the greatest population decline coincided with the general locations of commercial fisheries.
- 3.) The relationship between commercial fishing and SSL in terms of competition for food resources was unclear.
- 4.) Nutritional stress was theorized for GOA SSLs (based on reduced size at age).
- 5.) Telemetry information from 52 animals.

The rationale in the final rule for 3000 foot aquatic zones around rookeries and haulouts east of 144 degrees (subsequently to become the EDPS several years later) was based on the following:

“However declines in Steller sea lions generally are less severe in the areas to the east of 144 and information concerning specific foraging areas and special management needs does not exist at this time”¹⁰

Therefore the only known information for determination of the 3000’ rings for critical habitat east of 144 was that the decline of SSLs was not as severe as west of 144 degrees. There was no information concerning essential features concerning foraging areas and special management considerations for the area east of 144 degrees.

Status changes since 1993: The twenty mile rings of critical habitat around rookeries and haulouts west of 144 have been in place now for twenty-one years. Given the amount of new scientific information and the current SSL population status and trend, the basis for establishing the twenty mile rings in 1993 no longer appears to be valid or representative of current conditions. The following is a comparison of the 1993 rationale to the current information and status:

⁹ Final Rule, August 27, 1993, p. 45271

¹⁰ Final Rule, August 27, 1993, p. 45271-2

In 1993 there was a decline in the heart of the population – Kenai to Kiska. Now: The total population of the US portion of the WDPS has steadily increased since 2000 and is estimated to be 55,422¹¹ in 2013 (see attached Figure 1). This exceeds the down listing threshold recovery criteria for total population of the US WDOS of 53,100. The 2013 total population of the entire WDPS (including Russia at 27,100 in 2012) is now 82,522 (see attached figure 2) which is an increase of +65% from 2000 (when the total population of the WDPS was estimated to be less than 50,000)¹².

In 1993 the areas of decline coincided with fisheries. Now: The areas of the greatest increases in the WDPS population occur in the Kenai to Kiska area and coincide with the areas of the most commercial fishing effort (both inside and outside critical habitat in the EAI, WGOA, CGOA, and EGOA). The actual effectiveness of these fishery closures and their relationship to SSL population demographics needs to be re-evaluated. There is no scientific evidence that supports a negative relationship between SSL populations and commercial fishing. Consider the Commander Islands in Russia where there have been 30 mile fishery closure since 1958 with effective enforcement since the 1980s.¹³ Despite the long term implementation of a very large closure area, the population has not recovered.

In 1993 the relationship between fishing and SSLs was unclear. Now: There have been numerous statistical studies since 2000 investigating the relationship between commercial fishing and SSL population demographics and none have found a negative relationship. The Independent States Review Panel (ISRP) summarized the results of these studies in Table 3.1 of their report. *“However, results for years after 2000 are unequivocal. None of these studies found statistically significant associations consistent with harm by fisheries, that is, 100% of the tests resulted in outcomes consistent with the groundfish fisheries having had no effect on sea lion numbers in the last 10-20 years.”*¹⁴

In all, the ISRP examined 10 statistical studies – all of which were analyses of actual fishing statistics and actual SSL population changes. Some of these studies were commissioned by NMFS such as Calkins 2008 and AFSC 2010 (the “footprint analysis”). Now recently NMFS has come out with a report that suggests that all of these statistical studies are flawed – including the studies commissioned by NMFS or conducted by AFSC. The conclusion of Conn, Johnson, Fritz, and Fadely is based on *“a more comprehensive form of power analysis where we fit a battery of statistical models to data that were simulated from hypothetical populations of Steller sea lions and fish.”* In the end, what this paper fails to provide is any statistical evidence that there exists a negative relationship between commercial fishing and SSL populations. Recall, that the designation of critical habitat and essential elements cannot be based upon speculation.

In 1993 there were no such statistical studies (of real populations or hypothetical populations) nor was there any exposure analysis. Since then there has been considerable amount of work on the potential overlap with fisheries in terms of depth, temporal, spatial, and size of prey. The potential for competition between fisheries and SSLs is considerably less than previously stated

¹¹ Page 2, “Results of Steller Sea Lion Surveys in Alaska, June-July 2013”, 2013 pup count = 12,316 X 4.5 = 55,422.

¹² 2014 BIOP, p. 35.

¹³ SSLMC presentation, July 2012. In 1993, the Commander Islands Nature Preserve was also established.

¹⁴ Independent Scientific Review, p. xii.

(though it varies by species). Generally, fisheries harvest larger fish than the SSLs eat. When comparing the depth of fisheries (generally greater than 100 meters) and the majority of SSL dive depths (less than 100 meters), the spatial overlap is minimal.

In 1993 nutritional stress was hypothesized: Now: The best available science (including the external scientific reviews by the CIE and the ISRP) do not support the premise of nutritional stress in WDPS Steller sea lions as result of the indirect effects for the competition of prey from the groundfish fisheries.¹⁵ In particular, the CIE found little to no evidence of nutritional stress:

(Bowen, p. 5) noted: *“Therefore, I conclude there is little evidence that SSL experienced nutritional stress in the past and essentially no evidence that SSL are currently experiencing nutritional stress.... “But the fact remains, no evidence of nutritional stress is evident from multiple studies.”*

Stokes (p. 3): *“Evidence for nutritional stress (whether fishery-induced or natural) is very limited and the hypothesis effectively remains conjecture; and the analysis of risks posed by fishing to prey fields is flawed.”*

Stewart (p. 11): *“There does not appear to be any substantive direct evidence to support the suggestion or bottom-up hypothesis that SSLs have been, are, or might be nutritionally stressed.”*

The 2014 BIOP states that: *“Most of the available evidence is either counter to or non-supportive of a nutritional stress mechanism to explain the population dynamics for the WDPS.”*¹⁶

There is also no evidence of metabolic depression in WDPS juveniles as well.¹⁷

In 1993 there was telemetry from only 52 animals. Now: There have been a considerable number of telemetry studies by multiple agencies over the last twenty years. There is a need for a synthesis of this information as it may provide the best insight as to actual use of habitat by SSLs and therefore inform the appropriate selection of critical habitat. The most useful telemetry information would combine spatial dispersion with bathymetry (depth) as well as SSL dive depth information when available. If possible, it would be useful to make a determination of the activity of the SSLs with telemetry (such as discerning foraging versus traveling movement). Additionally there have been considerable numbers of branded sea lions since 1990 (7000 in Russia and 2000 in Alaska) and a synthesis of brand/re-sight information would be useful to determine SSL movements between rookeries and between areas.

¹⁵ Page 37487, July 1, 2014 Proposed Rule; management measures are “to protect SSL from the potential effects of groundfish fishing”.

¹⁶ Page 77, 2014 BIOP

¹⁷ Hoopes, Rea, Christ, and Worthy 2014 “No evidence of metabolic depression in western juvenile SSLs”, PLOS One, January, 2014.

New information

Critical habitat may be revised as significant new scientific information and data become available. Since 1993, there is a considerable volume of new scientific information available that pertains to the essential features and critical habitat designation.

The ESA provides for making revisions to critical habitat: *“The Secretary shall designate critical habitat, and make revisions thereto, under subsection (a)(3) on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat.”*¹⁸

The best available scientific information does not support a simple rollover of a large swath of critical habitat composed of twenty mile rings around each rookery and haulout for the WDPS. There is new information regarding increasing total population; increased pup counts; increased non-pup counts; increased tagging and telemetry data; there is no scientific evidence of nutritional stress; and there are no studies that found statistically significant negative effects on SSL population demographics from fishing since 2000

Essential Features for 2014

So what should be the essential features for re-vising critical habitat? Generally, the essential features identified in 1993 are still useful (with the exception of rafting sites), that is:

- 1.) Terrestrial habitat: rookeries and haulouts
- 2.) Aquatic habitat: nearshore waters around rookeries and haulouts
- 3.) Foraging habitats: near rookeries and haulouts
- 4.) Food resources

The identification of terrestrial and aquatic habitats as essential features to prevent disturbance (#1 and #2) appears to remain valid essential feature. The essential feature of foraging habitat (#3) near rookeries and haulouts is now best determined by analysis of additional telemetry data. But given the amount of new information, it is not clear that the simple presence of food resources (#4) or the likelihood of the presence of food resources in a large area constitutes an “essential feature”.

Taking the 1993 essential features in order: the intent of #1 and #2 (terrestrial and aquatic habitat) is to prevent disturbance at rookeries and haulouts (i.e. the 3000’ buffer). While these concerns are still valid, consideration should also be given to research activities including survey methods that may involve authorized drone use. NMFS will also have to examine the rookeries and haulouts and evaluate where a no vessel transit zone may impact vessel safety; impede transportation; and/or have significant economic impacts. For example, modification of the no transit zone was previously considered in specific areas such as Akutan, Clubbing Rocks, and Outer Island.

¹⁸ ESA Section 4 (B)(2)

Telemetry: The intent of #3 would be to identify the foraging area in the immediate area of rookeries and haulouts. The identification of essential foraging areas and use would best be delineated by telemetry data. The purpose is to determine the foraging areas that are essential (not occasional use or kind-of-sort-of-maybe critical) but actual critical habitat essential for the species.

There have been a considerable number of telemetry studies by multiple agencies over the last twenty years. There is a need for a synthesis of this information as it may provide the best insight as to actual use of habitat by SSLs and therefore inform the appropriate selection of essential critical habitat. The most useful telemetry information would combine spatial dispersion with bathymetry (depth) as well as SSL dive depth information when available. If possible, it would be useful to make a determination of the activity of the SSLs with telemetry (such as discerning between foraging versus traveling movement).

Additionally there have been considerable numbers of branded sea lions since 1990 (7000 in Russia and 2000 in Alaska) and a synthesis of brand/re-sight information would be useful to determine SSL movements between rookeries and between areas.

In 1993, the rationale for the selection of the foraging areas was based on: relative SSL abundance; importance to SSLs; and concentration of prey. The current foraging areas should be re-evaluated in light of the telemetry and tagging studies since 1993.

Histograms: In the determination of habitat use, the presentation of SSL dive and trip information should be presented in histogram form presenting the distribution of the data and proportions of use. For example, SSL dive data should be presented as the proportion of dives at depth strata. While this has been done previously in some papers, there has sometimes been only presentation of the maximum dive depth (such as statements that SSLs can dive to 350 m) where the actual data indicates that 99% of the dives are less than 100 m and the mean dives are less than 50 meters. Presentation of only the maximum values does not allow for the necessary analysis to determine what is essential or critical. Similarly, the presentation of SSL dive duration should not be given as only the maximum but as proportions of dives (as well as the mean dive durations).

In order to better determine the critical habitat that is essential to SSLs, the presentation of telemetry information for SSL foraging trips may be needed to be broken down break down more finely to determine actual habitat usage. It would be useful to break the strata for example into 0-3 miles; 3-5 miles; 5-7 miles; 7-10 miles; 10-15 miles; 15-20 miles.

Platform of Opportunity (POP) data: Boor et al

One database that does not appear to be currently useful in defining essential features or critical habitat is the POP database as used in Boor. Primarily the POP database is more informative about the distribution of the vessels making the observations than the actual distribution of SSLs. A major flaw with the POP data is that there is no identification of what activity the SSL is engaged in, making the determination of habitat use speculative in nature.

Additionally, the POP data is dated and there are large spatial “holes” in the database that cannot simply be overcome with extrapolation. For example, the area south of the CAI is considered “unsurveyed” (in Boor) as well as areas south of the AK Peninsula. There are gaps in the shelf waters south of the mid and eastern AI chain and AK Peninsula. In the areas N of the WAI (Bowers Basin and Bowers Ridge), and north of Attu and Buldir – all have very sparse POP coverage as does the offshore area in the GOA. In the offshore area SE of Attu and Agattu (characterized as “high encounter rate areas” in Boor), all the POP data is from prior to 1980 and only occurs in the winter (non-breeding season). In the Aleutian Basin, 78% of the sightings were between 1982 and 1987

Food resources: The interpretation of #4 (food resources) is going to be quite different today than in 1993. At the original designation of critical habitat there was great uncertainty as to the indirect effects of fishing on SSL prey resources. There was also a declining SSL population and a theorized nutritional stress. This was the basis of the rationale for expansion to the 20 mile rings west of 144. Now there is no evidence of nutritional stress, an increasing population, and after considerable study – no scientific evidence of deleterious effects on SSL populations from the effects of fishing.

Given the best scientific information available, and taking into consideration the ruling in the polar bear case (that essential features cannot be speculative), it will be difficult to assert that the mere presence of pollock, cod, or Atka mackerel justifies a critical habitat designation. In particular, the designation of 20 mile rings as critical habitat may not be supported by the best available science. The 20 mile rings were established when there was a declining population, hypothesized nutritional stress, and considerable uncertainty regarding the effects of commercial fishing. None of these concerns appear to be valid today.

The use of 20 mile rings leads to designating large swaths of area and that is why the current area of critical habitat is the size of California.

While the math may be obvious, it is sometimes easy to forget that the area of a 20 mile radius ring (1256 sq. mi.) is 4 times the area of a 10 mile radius ring (314 sq. mi.) and the area of a 10 mile radius ring is 4 times the area of a 5 mile radius ring (78.5 sq. mi.). The area of a 20 mile radius ring is 16 X the area of a 5 mile radius ring.

With the best scientific information, the best approximation of critical habitat may not be a ring at all. It may turn out that critical habitat may best be determined by a bathymetric curve such as 100 meter or 50 fathom curve around a rookery or haulout. Consideration might also be given to a seasonal designation of critical habitat that may change in size by season.

Thank you for consideration of these comments.

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Attachment

Figure 1

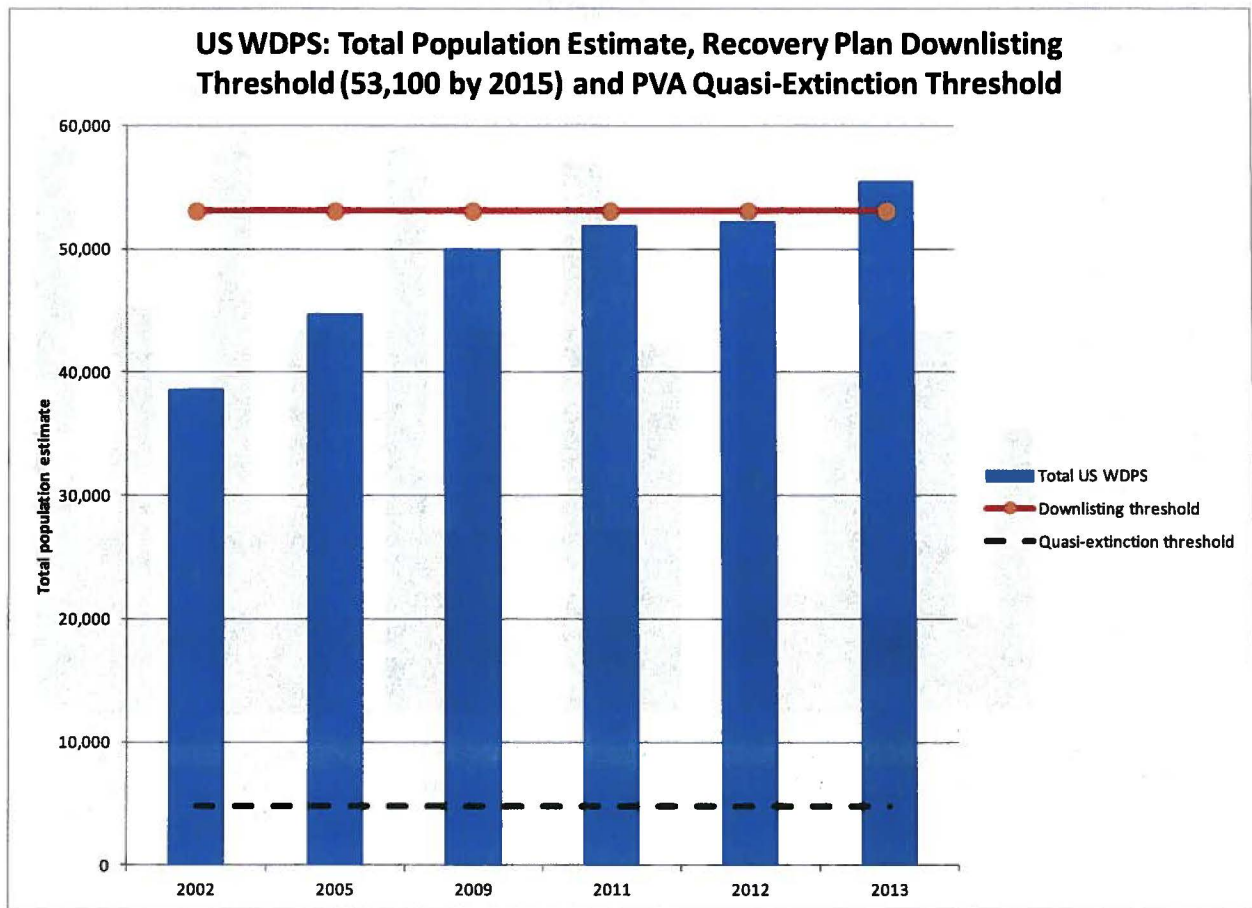


Figure 2

