Whale Entanglements in Crab Line

This is not a debate as to whether or not whales get tangled in crab gear. Instead, what I would like to do is express a few thoughts on the matter. There are two methods I can think of to reduce entanglements.

1. Reduce the number of whales — this is definitely not the preferred solution for lots of reasons, least of all, is that the whales were here first!
2. Reduce the amount of crab line in the water — while this will cause lots of screaming and whining, this is doable, especially when viewed against the historic pre "limited entry" profile of the fishery.

In the 60's and 70's, Dungeness fishermen typically had 150 to 250 traps, plenty of gear to make a day's work and a worthwhile landing. Also during that time most fishermen in Northern California fished and made a year's income fishing salmon. Salmon closures and the establishment and essentially permanent closure of the KMZ pushed salmon fishermen into the crab fishery in Northern California . The implementation of "limited entry" on the crab fishery added 400 new (and permanent) fishermen into the mix. The influx and effort shift caused a rapid increase in competition resulting in more and more gear per vessel, and a corresponding drop in "catch per unit effort" (CPU) per trap. Even with the tiered trap limit provision, which somewhat reduced the gear amounts for the biggest vessels, also caused every permittee to maximize the legal number of traps for their respective permit, this resulted in too much gear in the water which then caused the fishery to expand geographically.

During the pre "limited entry" portion of the fishery, one rarely fished outside of 40 fathoms. Outside of 40 fathoms, strong current and weather conditions kept the gear down and often times, unretrievable for days. Fishing only inside of 40 fathoms also allowed deep water Dungeness crabs to migrate to the beach in the early spring to mate. After mating, the males were then subject to harvest by the remaining fishermen. Fishing now takes place out as far as 110 fathoms, leaving almost nothing left for a "spring run" harvest.

So— the fishery has expanded greatly as far as its historic geographic footprint is concerned **and** it is significantly over-capitalized by excessive gear which equals excessive **rope**!! The goal is to attempt a few measures to potentially reduce entanglements by a reduction in the amount of rope (a.k.a. buoy line or scope) in the fishery.

**# 1** – Reduce the 6 top tier trap limits by 10% — but do not reduce the tier 7 limits as these are "entry level" permits that are barely affordable to young fishermen.

Here are the numbers:

| | # of Traps | 10% reduction |
|---|---|---|
| Tier 1 - 500 traps x 58 permits = | 29,000 | 2900 |
| Tier 2 - 450 traps x 54 permits = | 24,300 | 2430 |
| Tier 3 - 400 traps x 55 permits = | 22,000 | 2200 |
| Tier 4 - 350 traps x 55 permits = | 19,250 | 1925 |
| Tier 5 - 300 traps x 55 permits = | 16,500 | 1650 |
| Tier 6 - 250 traps x 169 permits = | 42,250 | 4225 |
| Tier 7 - 175 traps x 118 permits = | 20,650 | No change |

Total traps in tiers 1-6 = 153,330
Total 10% reduction of traps in tiers 1-6 = 15,330
So — 15,330 is the number of traps potentially leaving the fishery, let's look at these results...

Crab gear set in 10 fathoms has on average 18 fathoms of buoy line per trap. Other depths look roughly like this:

| Depth set | Buoy line scope average |
|---|---|
| 10 Fathoms | 18 fathoms, plus or minus |
| 25 Fathoms | 38 " " " |
| 50 Fathoms | 75 " |
| 100 Fathoms | 135 " |

Total line per trap increases by depth. If we agree for the sake of discussion that the fleet average for fishing depth is about 25 fathoms, then each trap has about 38 fathoms of buoy line or 228 feet of rope not including buoys and trailers.
Removing 15,330 traps with an average buoy line length of 228 feet looks like this:
15,330 traps x 228 feet = 3,495,240 feet of rope. This is 661 miles of rope that could be removed from the ocean! Now, there is still a lot of line in the water which sometime later could warrant additional reductions over time. As far as the crabs are concerned, they are still going to get caught, only the "catch per unit effort (CPU)" per trap will increase slightly.

**#2** — Discontinue fishing for Dungeness crabs in water deeper than 50 fathoms.
This historically was not fished until there was an increase of fishermen, permits and trap limits. If 8% of the total available traps are fished deeper than 50 fathoms and then this area was closed to crab fishing, things could look like this.

- average fishing depth of 80 fathoms = 124 fathoms of buoy line
- Average fishing depth of 25 fathoms = 38 fathoms of buoy line
- Reduction of buoy line per trap = 86 fathoms which equals 516 feet

Okay, now let's assume that only 8% of the total trap numbers (173,950) fishes outside of 50 fathoms, this would equal 13,916 traps. If those traps now fish in an average depth of 25 fathoms, the reduction in buoy line (rope) equals 13,916 traps x 86 fathoms of rope = 1,196,776 fathoms or 7,180,656 feet or 1359 miles of rope!

This all looks spectacular until you remember that according to California Fish & Game numbers, there are 173,950 permitted traps (not including illegal replacement tag traps) generating 7511 miles of buoy line (rope) at a **minimum**.
There is one more thing — lost gear. The crab pot retrieval program is vital to any over time reduction of buoy line rope on California's crab grounds. After the first year of limited gear, fishermen applied for nearly 10,000 replacement trap tags. If we give everybody the benefit of

the doubt and assume only 8,000 traps were lost (not just the trap tags) then again using our assumed average of 38 fathoms of buoy line rope per trap, 345 miles of line got lost in the ocean the first year of limited trap fishing. Without a pot retrieval program, lost gear will occur faster than the gear reduction program can contribute to lower whale entanglements via less rope in the ocean.

In conclusion — this proposal potentially removes 2000 miles of crab line from the California dungeness fishery which amounts to more than twice the length of the California coastline. It removes 10% of the pot (trap) numbers from the upper six tiers and shifts an assumed 8% of the traps inside of the 50 fathom curve in order to remove as much rope as possible in the area the most difficult and the least fished — outside of 50 fathoms. Again — the warning — without an effective enforceable trap retrieval program, this proposed reduction will be negated within 10 years of fishing by gear loss.

Ask any Dungeness crab fisherman and he or she will give you different answers as to the amount of buoy line (scope) they prefer to fish in different depths and conditions. I don't have the time or inclination to debate (read: argue) as to the exact lengths of every fishermen's buoy lines. The idea here is to present a way forward to protect and minimize whale entanglements and simultaneously allow California's crab fleet to operate sustainably and at a profit.

Finally — it's my guess that the environmental organization's side of the debate is unwilling to accept any compromise but instead wants crab fishermen off the ocean. Maybe we can all eat some miracle seafood substitute made from Industrial monoculture farming courtesy of Monsanto.

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