#3012

Timothy Pinion/Atlanta/NPS
09/23/2009 07:22 AM

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cc Britta Muiznieks/CAHA/NPS@NPS, cherry_green@nps.gov, Darrell Echols/CAHA/NPS@NPS, Sandra Hamilton/DENVER/NPS@NPS, Sherri_Fields@nps.gov,
bcc
Subject Re: Possible DFCs for AMOY, CWB and SBA

Thanks, Mike, for the information provided in your email below. I have drafted DFC tables for AMOY, CWB, and SBA based on your input. I am also attaching an excel file with CWB nest counts and targets in case anyone wants to play with the numbers.

I will continue to ponder a habitat variable for PIPL.

--Tim

DRAFT_Desired_conditions_SBA_20090922.docx DRAFT_Desired_conditions_AMOY_20090922.docx
DRAFT_Desired_conditions_CWB_20090922.docx CWB_NC_CAHA_nest counts.xlsx

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09/15/2009 09:51 AM

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Subject Possible DFCs for AMOY, CWB and SBA

Tim,

Here are some ideas for Desired Future Conditions for AMOY, CWB and Seabeach Amaranth (SBA). In general, we think these DFCs could/should have fewer "variables" than the DFCs for PIPL and sea turtles. We would appreciate your help in drafting these.

American oystercatchers (AMOY):
References: CAHA AMOY data that Britta perviously sent you (pasted below). *American Oystercatcher Research and Monitoring in NC, 2008 Annual Report,* Simons and Schulte (follow link):
http://www.ncsu.edu/project/simonslab/AMOY/References/2008_NC_AMOY_Report.pdf

CAHA AMOY data

Year	# Pairs	#	#	Ave Brood Size	Chicks Fledged		Broods w/		Fledg
					#	%	#	%	
1999	41	14	23	1.6	5	22%	5	36%	0.
2000	37	16	32	2.0	9	28%	7	44%	0.
2001	39	22	42	1.9	24	57%	15	68%	0.
2002	31	10	19	1.9	9	47%	7	70%	0.
2003	32	18	28	1.6	7	25%	6	33%	0.
2004	29	23	26	1.1	19	73%	12	52%	0.
2005	26	18	39	2.2	11	28%	7	39%	0.
2006	23	19	36	1.9	9	25%	7	37%	0.
2007	23	15	27	1.8	12	44%	8	53%	0.
2008	23	13	23	1.9	17	74%	10	77%	0.
2009	23	15	31	2.07	13	42%	8	53%	0.
1999-2007 AVG:	**31.2**	**17.2**	**30.2**	**1.8**	**11.7**	**39%**	**8.2**	**48%**	**0.**
2008 Comparison:	**-8.2**	**-4.2**	**-7.2**	**0.1**	**5.3**	**35%**	**1.8**	**29%**	**0.**
1999-2008 AVG:	**30.4**	**16.8**	**29.5**	**1.8**	**12.2**	**42%**	**8.4**	**51.%**	**0.**
2009 Comparison:	**-7.4**	**-1.8**	**1.5**	**0.3**	**0.8**	**0%**	**-0.4**	**2.3**	**0.**

Background: AMOY are relatively well studied at CAHA and CALO (e.g., the series of research projects by Simons et al) and there is pretty good data in recent years. In general, AMOY have had low productivity throughout NC and the research at CAHA/CALO shows that, among other things, low nest survival and low chick fledge rate are key issues. These are affected by a number of factors, particularly mammalian predation which accounted for 54% of known nest losses and an estimated 74% of all nest losses after unattributed losses were allocated. The number of nesting pairs at CAHA has decreased from a high of 41 prs in 1999 to 23 prs in recent years; however, what we have seen the past few years (2007-2009), which corresponds with increased predator control efforts as well as with interim strategy and consent decree, is a stable number of pairs (though there has been turnover in individuals), a reduction in the number of nests (meaning better nest survival and fewer re-nest attempts), and improved fledge rate (i.e., same number of pairs are more productive, but so far an increase in the number of pairs is "lagging"). Since we have no control over what happens to the pairs when they leave the park for the non-breeding season and have no good idea what may be happening to them, we think that nest survival and fledge rate are the best overarching indicators of progress since these directly relate to things we can manage and will directly affect or relate to other (potential) variables such as number of pairs and depredation rate. In other words, if we want to limit the number of targets for AMOY to just a few, we think nest survival and fledge rate capture the key issues for AMOY better than # of pairs or depredation rate would.

Suggested AMOY DFCs:

Nest survival rate (i.e., % of nests that hatch): (p. 19 of 2008 AMOY report - of all AMOY nests monitored from 1995 to 2008, an estimated 24.6% survived to hatching). We could have a short-term target of **"5 yr avg nest survival is 40% or higher"** and a long-term goal of **"5-yr avg nest survival is 50% or higher"** (Note: We believe the progress targets are realistic and sustainable, based on improved nest survival rates in recent years.)

Chick fledge rate (p. 31 of 2008 AMOY report - data from NC study sites, primarily CALO and CAHA, for 1995-2008 indicated an avg of .309 chicks fledged per nesting pair. We could have short- and long-term targets of "5-yr avg fledge rate of 0.40 or higher" (based on an avg improvement of approx. 3% per year) and a long-term target of " 5-yr chick fledge rate of 0.54 or higher" (based on an avg improvement of approx. 3% per year), or something similar. (Note: We believe the progress targets are realistic and sustainable, based on improved fledge rates in recent years.)

CWBs (CAHA focus is on least terns, common terns, gull-billed terns, and black skimmers) :
(references attached: 2007 NCWRC CWB Summary; CAHA Table 16 - CWB data)

Background: Peak nest count surveys have generally been documented by the State only every 3 yrs, so there is state-wide historic data but it is unclear whether consistent methods or level of survey effort were utilized. For the most part, the historic data has been "peak nest counts" and there is little information for the State or for CAHA about the number of breeding pairs, productivity, fledge rates, etc. While having a more sophisticated CWB target for "productivity" (fledge rate. etc.) would be desirable, it would be inherently difficult to measure even if we wanted to. The State has established State-wide goals for CWB species (target for # of nests), including the 4 species of interest at CAHA. See p. 10 of 2007 State report for state-wide goals for nesting CWB by species and p. 11 for historic state-wide totals of CWB nesting by species;). See CAHA Table 16 (attached) for the historic totals for CAHA of nesting CWB by species. Note: We have had preliminary discussions with NCWRC about standardizing our CWB survey methods in and around CAHA, so both WRC and CAHA can have a coordinated and consistent approach to CWB nest counts in the Outer Banks area as we move forward.

Possible CWB DFC: Compare CAHA's historic data with the State-wide data 4 species of interest for the same years to determine a CAHA "average %" then apply that % to the State-wide goals by species to determine CAHA's % share of the State-wide goal. For example, (numbers used are hypothetical for illustration purposes), if a.) CAHA has historically accounted for 10% of the least tern (LETE) nesting in the state by comparing CAHA totals for LETE to the State-wide total during the year's that the State compiled data; and b.) the state-wide goal for LETE is 2000 nests (Table 1, p. 10); then c.) CAHA's long-term goal would be 200 nests. The short-term goal could be half-way between our most recent 5-yr average (let's say the current 5-yr avg is 100 nests for illustration purposes). For example, if the long-term goal were 200 nests, then the short-term goal could be 150 (i.e., half-way toward the long-term goal). If this approach more or less makes sense, would you be able to do the math for each of the four species to determine possible short-term and long-term targets.

Seabeach Amaranth

Background: (from p. 5 of Pete Benjamin's comments to RegNeg)

The recovery criteria identified in the Recovery Plan for Seabeach amaranth (*Amaranthus pumilus*), Rafinesque (1996), state that a "minimum of 75 percent of the sites with suitable habitat be occupied by seabeach amaranth populations for 10 consecutive years." Cape Hatteras National Seashore has at least four seabeach amaranth sites – Bodie Island spit, Cape Point, Hatteras Inlet spits (Hatteras Island spit and North Ocracoke spit) and Ocracoke Inlet spits (Southern Ocracoke Island spit). Based on the stated recovery criteria, an appropriate goal would be to implement management control to promote and protect the occurrence of seabeach amaranth, at a minimum, at three of the four identified sites.

Note: Since we have not seen any SBA here for several years, basing a DFC on the recovery plan goal as described above likely means that we may need to develop a reintroduction program at the four sites. I don't know what that would entail (e.g., does FWS or other entity maintain a seed stock for such purposes?), but we will talk to FWS about it.

Possible DFC for SBA (adapted from the above): Short-term: Implement an SBA re-introduction plan. Long-term: SBA occurs on the Seashore for 5 consecutive years

Thanks,

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[attachment "WRC 2007 CWB report.pdf" deleted by Timothy Pinion/Atlanta/NPS]
[attachment "Table 16-CWB-corrected.091009.doc" deleted by Timothy Pinion/Atlanta/NPS]

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DRAFT FOR DISCUSSION PURPOSES ONLY
Desired Future Conditions for Seabeach Amaranth at Cape Hatteras National Seashore.

Variable	Short-term[1] target	Long-term[2] target	Source/ Comments
Number of suitable sites occupied by seabeach amaranth	Develop and implement a seabeach amaranth restoration plan at 4 suitable sites[3]	At least 3 of 4 suitable sites are occupied for 5 consecutive years	From USFWS Recovery Plan

[1]*Short-term* means 10 years (two 5-year periodic review cycles after implementation of plan)

[2]*Long-term* means 20 years (four 5-year periodic review cycles after implementation of plan)

[3]Suitable sites include Bodie Island spit, Cape Point, Hatteras Inlet spits (Hatteras Island spit and North Ocracoke spit) and Ocracoke Inlet spits (Southern Ocracoke Island spit).

DRAFT_Desired_conditions_AMOY_20090922.docx

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Desired Future Conditions for American Oystercatchers at Cape Hatteras National Seashore.

Variable	Short-term[1] target	Long-term[2] target	Source/ Comments
Number of nesting pairs	5-year average of 30 nesting pairs	5-year average of 45 nesting pairs	targets based on AMOY Conservation Action Plan and recent CAHA data[3]
Percent of nests producing at least one hatchling[4]	5-year average is 40% of nests or higher	5-year average is 50% of nests or higher	Source?
Fledge rate (chicks fledged per nesting pair)	5-year average is 0.40[5] chicks per pair or higher	5-year average is 0.50 chicks per pair or higher	3 % annual increase from current rate of 0.30
Depredation rate	Percentage of nests lost that can be directly attributed to depredation is 30% or less	Percentage of nests lost that can be directly attributed to depredation is 20% or less	Checking with VA DGIF about predator control efforts and corresponding shorebird success rates

[1]*Short-term* means 10 years (two 5-year periodic review cycles after implementation of plan)

[2]*Long-term* means 20 years (four 5-year periodic review cycles after implementation of plan)

[3]From page 11 of Conservation Action Plan: "We recommend that the population be stabilized and then gradually increased from its current level to at least 1.5 times its current size." (Schulte, S., S. Brown, D. Reynolds, and the American Oystercatcher Working Group. 2007. Version 2.0. American Oystercatcher Conservation Action Plan for the United States Atlantic and Gulf Coasts.)

[4]While the percent of nests producing a hatchling (nest survival rate) is an important variable to monitor, I am not sure that this target is needed if we have a fledge rate target.

[5]Based on recent upward trends in fledge rates, we may want to increase the short- and long-term targets.

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DRAFT FOR DISCUSSION PURPOSES ONLY
Desired Future Conditions for Colonial Waterbirds at Cape Hatteras National Seashore

Variable	Short-term[1] target	Long-term[2] target	Source
Annual peak number of least tern nests	5-year average of 308 nests	5-year average of 410 nests	Historically, CAHA has accounted for approximately 21% of NC total nests; NCWRC target for least terns is 2000
Annual peak number of common tern nests	5-year average of 592 nests	5-year average of 961 nests	Historically, CAHA has accounted for approximately 38% of NC total nests; NCWRC target for common terns is 2500
Annual peak number of gull-billed tern nests	5-year average of 53 nests	5-year average of 78 nests	Historically, CAHA has accounted for approximately 26% of NC total nests; NCWRC target for gull-billed terns is 300
Annual peak number of black skimmer nests	5-year average of 237 nests	5-year average of 336 nests	Historically, CAHA has accounted for approximately 34% of NC total nests; NCWRC target for black skimmers is 1000

[1]*Short-term* means 10 years (two 5-year periodic review cycles after implementation of plan)

[2]*Long-term* means 20 years (four 5-year periodic review cycles after implementation of plan)

Short-term target is to achieve the mid-way point between the long-term target and the average of 5 most recent data points from CAHA (5 most recent data points are from 2000, 2001, 2004, 2007, and 2008 counts).

Long-term target is to achieve percentage of total goal for colonial nesting waterbirds in North Carolina (2007 NC CWB report) based on historic percentage of CAHA nests relative to NC totals.

These targets assume that nest count methodology has been consistent at CAHA and in NC since 1977. We know that they have not.

Species	
least tern	CAHA
	NC
common tern	CAHA
	NC
gull-billed tern	CAHA
	NC
black skimmer	CAHA
	NC

1997	1983	1988
121	508	450
1925	1653	1528
802	763	678
2761	2247	2618
27	7	26
268	233	161
286	296	144
976	797	743

1993	1995	1997
761	342	278
2188	1993	882
422	503	718
2122	1699	952
12	58	84
155	249	137
226	139	454
1084	819	570

1999	2001	2004
355	202	212
1271	1742	2408
440	573	376
888	1131	570
103	108	31
154	258	99
306	193	342
681	594	623

2007	CAHA/NC	Goals
194	20.51	410
2827		2000
22	38.44	961
498		2500
0	26.16	78
90		300
1	33.58	336
555		1000