

I.

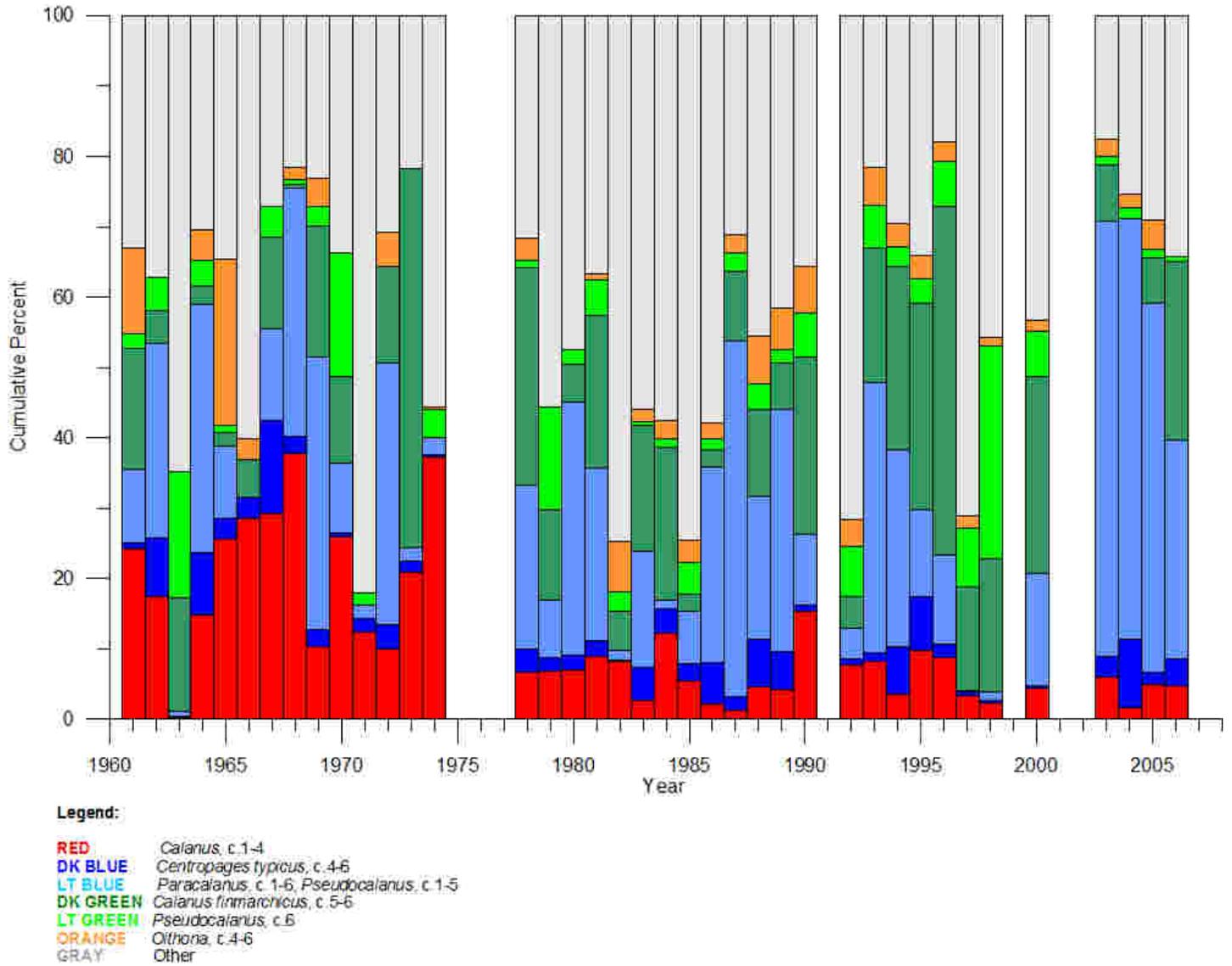


Figure 39. Annual cumulative percent contribution of six taxa to Continuous Plankton Recorder catches for the Massachusetts Bay section of the Gulf of Maine transect. Data are presented only for years where all twelve months were either sampled, or could be interpolated.

II. COMMENTS

For the Massachusetts Bay section of the Gulf of Maine CPR transect during 1961 through 2006, the contribution of these six taxa to the annual total CPR catch had a mean of 57.9% (STD=17.7). Mean for *Calanus*, c.1-4 was 11.4% (STD=10.0); *Centropages typicus*, 4-6 was 3.3% (STD=3.0); *Paracalanus*, 1-6 and *Pseudocalanus*, c.1-5 was 20.6% (STD=17.7); *Calanus finmarchicus*, c.5-6 was 14.5% (STD=12.6); *Pseudocalanus*, c.6 was 4.7% (STD=6.0); and *Oithona*, c.4-6 was 3.3% (STD=4.2). Contributions between years varied considerably as can be seen by the standard deviation values in parentheses, above. Most striking was the declining contribution of early stages of *Calanus* (mostly *Calanus finmarchicus*) through the period, and the increase of the *Paracalanus/Pseudocalanus* complex. The decline in the early stages of *Calanus* is not evident in the late stages of *Calanus finmarchicus*, nor is the *Paracalanus/Pseudocalanus* increase apparent for *Pseudocalanus* adults. *Centropages typicus* and *Oithona* show no clear trends through the period, but *Oithona* was nearly absent from samples in 1963, 1967, 1970, 1974, 1979, 1981, and 2006.

For several years, e.g., 1963, 1971, 1982, 1985, 1992, and 1997, the six taxa's contribution was considerably less than average. A number of explanations for this are possible. Often, samples are briefly dominated by larval stages of non-copepod organisms, e.g., barnacle larvae or decapod larvae. However, annual means should be less altered by this than would monthly data. Daylight and darkness passages over sections of the transect could alter the catch of the CPR sample from 10 meters for organisms going through vertical migrations. An examination of the "other" component of catches, and of the time of day for passages over the Massachusetts Bay section of the transect remain to be done.
Figure 39. (cont.).

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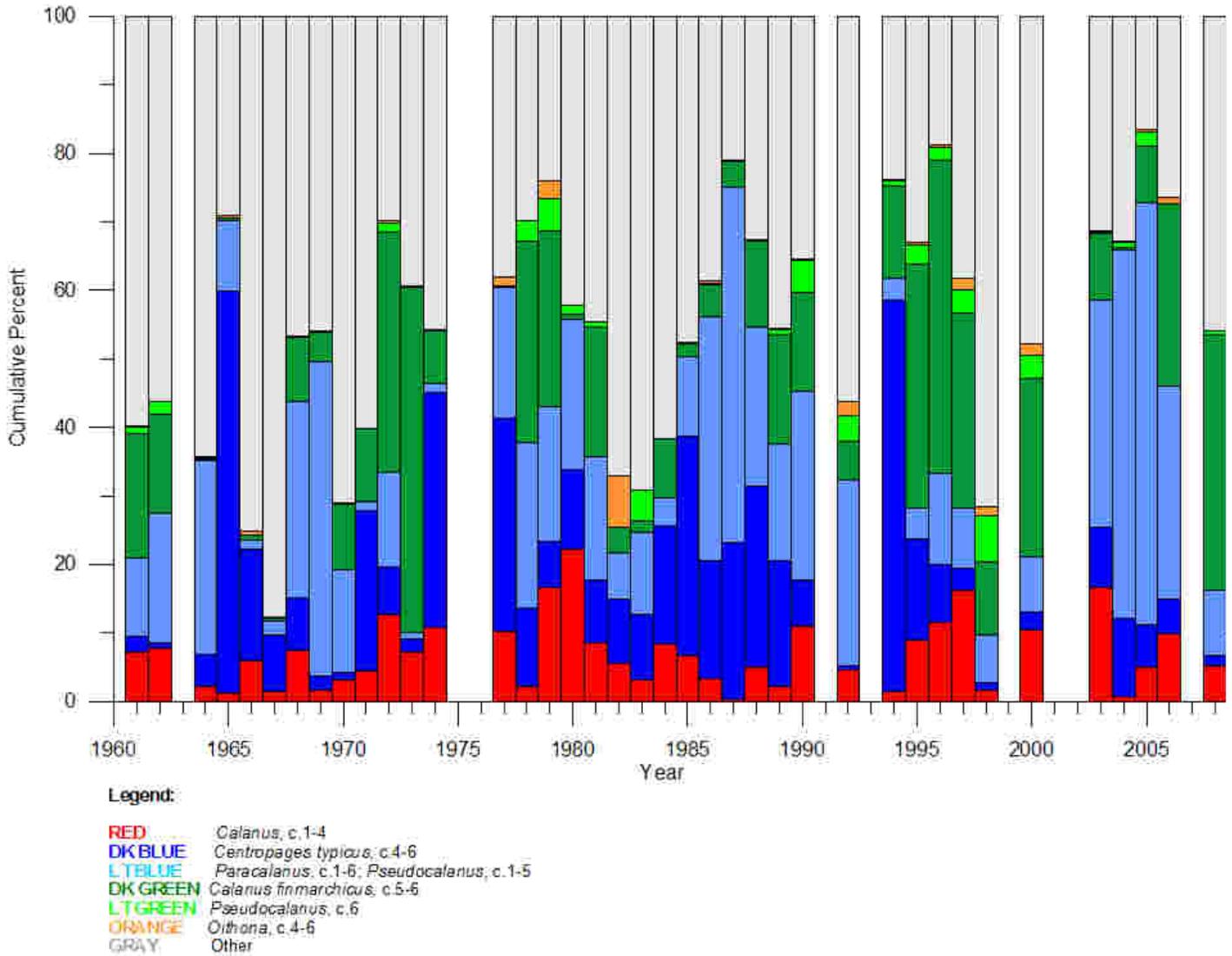


Figure 40. Annual cumulative percent contribution of six taxa to Continuous Plankton Recorder catches for the central section of the Gulf of Maine transect. Data are presented only for years where all twelve months were either sampled, or could be interpolated.

II. COMMENTS

For the central section of the Gulf of Maine CPR transect during 1961 through 2006, the contribution of these six taxa to the annual total CPR catch had a mean of 55.1% (STD=17.4). Mean for *Calanus*, c.1-4 was 7.0% (STD=5.1); *Centropages typicus*, 4-6 was 13.3% (STD=13.9); *Paracalanus*, 1-6 and *Pseudocalanus*, c.1-5 was 18.8% (STD=15.4); *Calanus finmarchicus*, c.5-6 was 14.1% (STD=13.5); *Pseudocalanus*, c.6 was 1.3% (STD=1.7); and *Oithona*, c.4-6 was 0.6% (STD=1.3). Contributions between years varied considerably as can be seen by the standard deviation values in parentheses, above. The down trend of early stages of *Calanus* seen in Massachusetts Bay was not apparent in the central Gulf. Slightly higher contributions were seen from the early 1970s to early 1980s and again from the mid-1990s to about 2003. Adult *Calanus finmarchicus* showed considerable inter-annual variability, but no clear trend. Interestingly it was nearly absent from samples in 1964-1967, 1977, and 2004. The *Paracalanus/Pseudocalanus* complex exhibited the same increasing trend seen in Massachusetts Bay, with exceptions in the late 1990s and again at the end of the series. Adult *Pseudocalanus* and *Oithona* were lesser contributors here than over the shallower waters of Massachusetts Bay, and were nearly absent from catches in a number of the years.

Again, for several years, e.g., 1966, 1967, 1982-1984, and 1998, the six taxa's contribution was considerably less than average. As commented on for Massachusetts Bay, the possible reasons for this remain to be sought.

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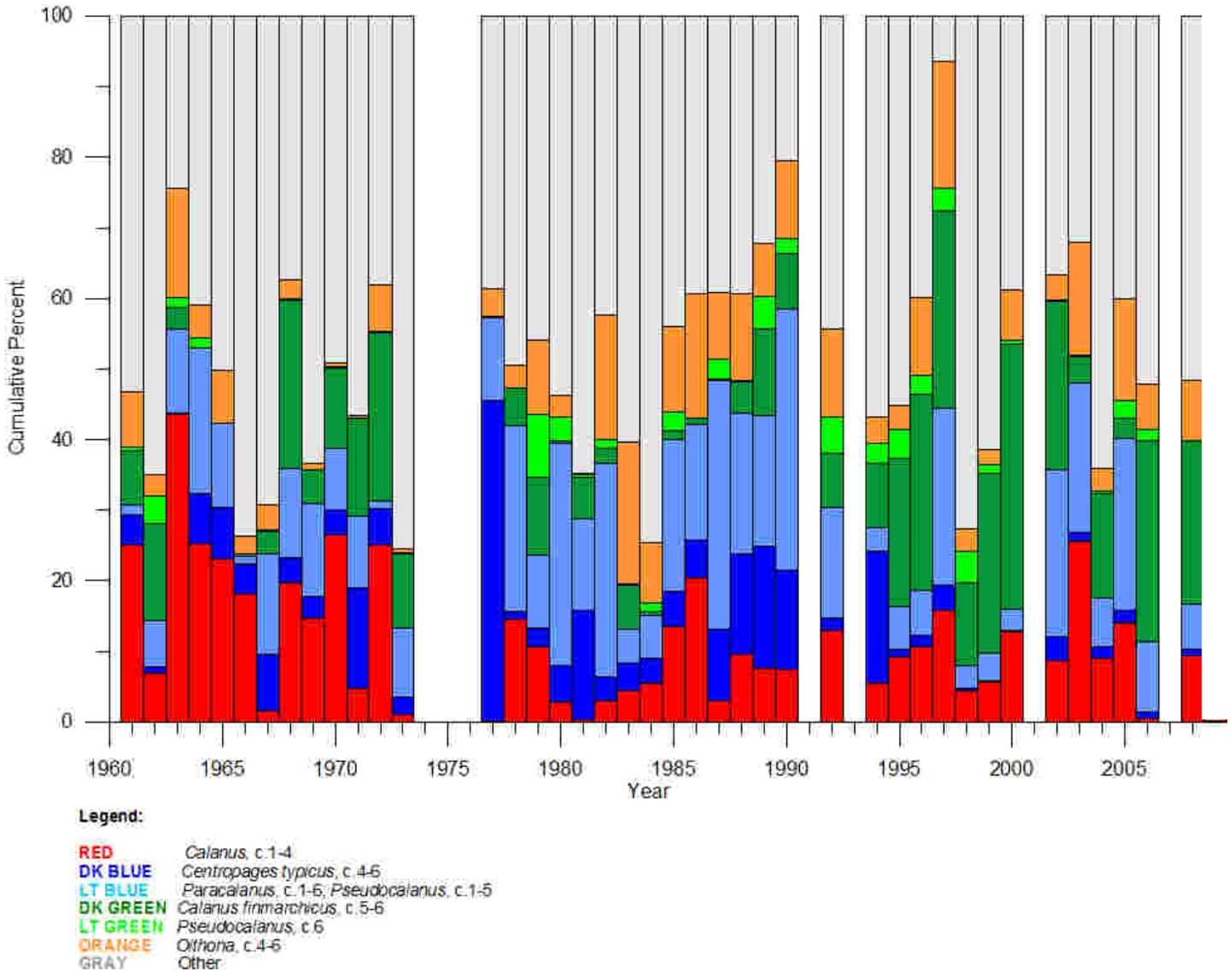


Figure 41. Annual cumulative percent contribution of six taxa to Continuous Plankton Recorder catches for the western Scotian Shelf section of the Gulf of Maine transect. Data are presented only for years where all twelve months were either sampled, or could be interpolated.

II. COMMENTS

For the western Scotian Shelf section of the Gulf of Maine CPR transect during 1961 through 2006, the contribution of these six taxa to the annual total CPR catch had a mean of 51.4% (STD=15.4). Mean for *Calanus*, c.1-4 was 11.8% (STD=9.4); *Centropages typicus*, 4-6 was 6.0% (STD=8.1); *Paracalanus*, 1-6 and *Pseudocalanus*, c.1-5 was 13.8% (STD=9.7); *Calanus finmarchicus*, c.5-6 was 10.7% (STD=10.1); *Pseudocalanus*, c.6 was 1.6% (STD=1.9); and *Oithona*, c.4-6 was 7.4% (STD=5.7 Contributions between years varied considerably as can be seen by the standard deviation values in parentheses, above. Most noteworthy was the declining contribution of early stages of *Calanus* (mostly *Calanus finmarchicus*) through the period (although less clear cut than in Massachusetts Bay), and the increase of the *Paracalanus/Pseudocalanus* complex. As was the case in Massachusetts Bay, the decline in the early stages of *Calanus* was not evident in the late stages of *Calanus finmarchicus* (*C. fin.* actually shows an increase in contribution during the late 1990s compared to earlier years), nor is the *Paracalanus/Pseudocalanus* increase apparent for *Pseudocalanus* adults. *Centropages typicus* contributed significantly in 1977 and had high values in 1981, from 1988-1990, and again in 1994. Otherwise its contribution was relatively steady. *Oithona* contributed more to western Scotian Shelf samples than to those from the other two sections of the transect. However, it was nearly absent from the samples in 1971 and 1981.

For several years, e.g., 1962, 1966, 1967, 1973, 1984, and 1997, the six taxa's contribution was considerably less than average. As commented on for Massachusetts Bay, the possible reasons for this remain to be sought.