

Loops

For Loops

- Useful when
 - Known number of loop iterations are needed
 - Do a particular task for all elements in a list
 - Examining elements of a finite set (e.g. list)

While Loops

- Useful when
 - Unknown number of loop iterations are needed
 - Iterate until a species goes extinct
 - One has a limit to reach instead of a list to process
 - Do a task until a population reaches a certain size

While Loops

- Take the form

while condition:

block

e.g.

```
while density < 100
```

```
    p = p + r*p
```

```
    estimate density
```

```
print density
```

While Loops

- Are conditional
 - Only iterate as long as some condition is true
 - while days < 365:
 - while time < 24:
 - while proportion occupied < 100:

While Loops

- Can be nested:

For each growth rate:

 while density is < 100 :

While Loops

- Can call functions within while loops:

For each growth rate:

while density is < 100:

f = function(x, y, z)

t += 1

Caution

- Infinite loops (systematic error):
 - Arise when the conditional statement is never met

T = 10

while T < 10:

run forever

T += 1